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COMPUTERWORLD

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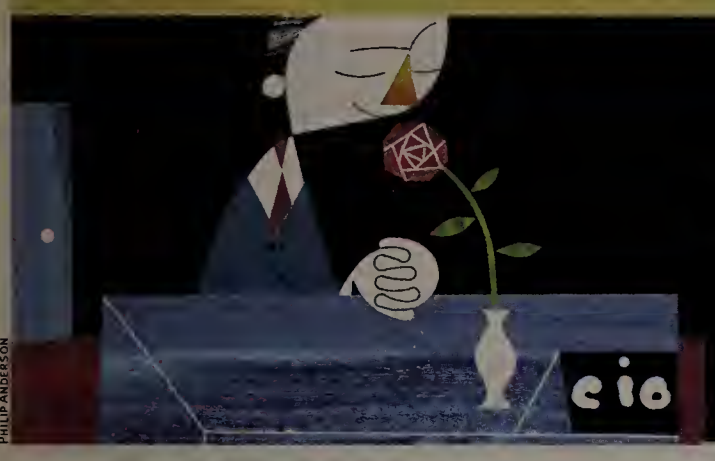
CIO Means Career Isn't *Over*

What turnover problem? *Computerworld*'s survey shows CIOs outlast other executives.



PHILIP ANDERSON

Average time on job:	
CIO	6.6 years
VP of sales	5.6 years
VP of HR	5.3 years

See Managing, page 88.

Novell users hedge bets

By Laura DiDio

Users will arrive at this week's Networld/Interop '96 in Atlanta amid a hotly contested battle for network operating system mind share.

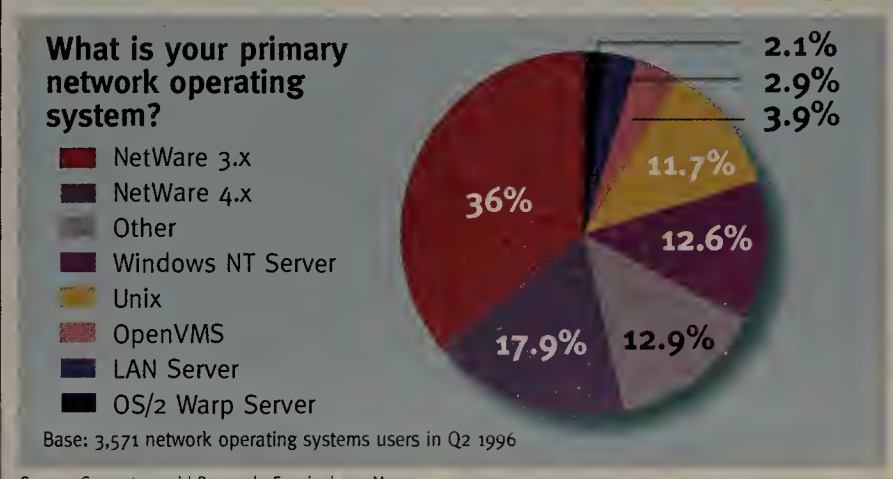
According to a *Computerworld* survey of 2,500 users, Novell, Inc.'s NetWare is still very much entrenched, although users are eyeing other options. Many are at a crucial juncture: They must decide whether to stick with market-leading NetWare, migrate to challenger Windows NT Server from Microsoft Corp. or attempt a dual strategy.

Networld/ Interop '96

"We're all in the same boat — satisfied with NetWare as a product but concerned about Novell's future and continued financial stability," said George Halkias, a database analyst at Johnson & Johnson Ethicon, Inc., a wholly owned subsidiary of Johnson & Johnson, Inc. in Somerville, N.J.

The survey found that many NetWare users feel the same. Sixty-six percent of those polled said they will stick with it. But nearly all of those interviewed said they are growing

Novell users, *page 16*



Source: Computerworld Research, Framingham, Mass.

U.S. Internet usage

Last year, 40% of all households had PCs, and 62% of those PCs were equipped with modems

16 million users access the Internet daily

Internet usage is expected to grow 60% this year

Source: Alex. Brown & Sons, Inc., New York

'net crunch escalating

By Kim Girard and Mitch Wagner

The Internet has experienced a noticeable slowdown over the past two weeks, and vexed users are pitching theories that range from overtaxed routers to a September surge in student use.

A dozen users and analysts ran-

'net crunch, *page 135*

New rule tightens year 2000 noose

By Robert L. Scheier

If you're still trying to get funding to solve your year 2000 problems, take an aspirin. Maybe two.

It's bad enough that you will be asking for money to solve a problem that IS created by building or buying applications that can't distinguish between the 20th and 21st centuries. Now a new accounting rule makes it more likely that fixing the problem will hurt short-term earnings and anger shareholders.

Under the rule, companies must account for year 2000 expenses when the work is done, rather than spreading out the costs over years. And this makes year 2000 work an even worse business proposition, said Jim Jones, managing director of The Information Management Forum, an Atlanta- based association of

Year 2000, *page 135*

56K modems on deck

By Bob Wallace

Rockwell Semiconductor Systems is preparing a 56K bit/sec. modem chip set — today's top out at 33.6K bit/sec. — that analysts said will enable faster access to the Internet and corporate data networks from remote sites and mobile workers' computers.

Market growth

The market for today's standard, the 28.8K bit/sec. modem, is expected to post a compound annual growth rate of more than 33% from 1995 to 2000, according to International Data Corp.

Rockwell, which provides chip sets to many modem makers, will demonstrate the technology in November at Comdex/Fall '96 in Las Vegas. Company officials wouldn't say when Rockwell will ship the chip set.

The high-speed chip set will enable modems to support data transmission over regular analog lines at 56K bit/sec. That will let users transmit and receive more data in less time, which would result in lower

56K modems, *page 135*

WHAT'S INSIDE

- CNet journalists hack in to sites to prove a point. **See story, page 6,** *by Mitch Wagner.*
- The venerable Boston Computer Society folds. **See story, page 7,** *by Matt Hamblen.*
- For Networld/Interop '96 coverage, turn to pages **14, 15 and 16.**
- 3Com and Cabletron score well in a *Computerworld* user survey on internetworking; Cisco, Bay Networks and IBM draw lukewarm feedback in several areas. **See Buyer's Guide, starting on page 99.**

NETWORLD+INTEROP 96

Newspaper

Up Front

Web woes

As the product manager watched his demo sputter and die yet again, he gritted his teeth and chanted in a low, desperate monotone, "God I hate PCs, God I hate PCs." Then he realized that the culprit was a failed network connection instead of our familiar friend, General Protection Fault. He narrowed his eyes and tried to remember whom to blame. Was it the network connectivity software vendor? The local Internet service provider? The phone company?

Welcome to the new world, same as the old world. The scene of this crime against successful product demonstrations was an Internet show aimed at electronic commerce, but it could have been any trade show in the past decade. There's a whole lot of rebooting going on. And a lot of IS professionals are smiling sagely, shaking their heads and moving on to the next booth to see the next World Wide Web Wonder.

Indeed, users are weighing their options and gathering advice from colleagues who've been there, done that. They're also watching the recent spate of Internet service slowdowns (see story, page 1) with a cautious eye.

For those ready to forge ahead with a Web site but unwilling to undertake the task on their own, our Marketplace section (page 122) offers some tips for evaluating Web outsourcers. Our In Depth section (page 105) features an IS contractor talking about how to work with this new breed of outsourcer more effectively.

But when an IS shop is finding its own way with Web technology, the core issue remains how to manage it. Check out Patrick Dryden's story about Web-based network management (page 57) and the approach used by David Brown, director of network services at *The New York Times*. Each morning, he gets a jump on diagnosing a problem before it affects his users by checking for emerging performance problems on his network — via a browser-equipped laptop in his bedroom. Then, during his morning commute, he figures out how to fix whatever's wrong.

Now that's service and reliability, real-world style.

Maryfran Johnson, Executive editor
Internet: maryfran_johnson@cw.com

The 5th Wave by Rich Tennant

Microsoft joins PDA market

By Mindy Blodgett

The drooping handheld computer market will get a boost this week when Microsoft Corp. unwraps Windows CE, its long-awaited operating system.

Code-named Pegasus, Windows CE was designed to run on handheld computers and personal digital assistants (PDA). Windows CE will also work with devices such as smart phones and pagers.

Jon Magill, director of Microsoft consumer appliance marketing, said Windows CE will offer wireless electronic mail, Internet access and data synchronization and communication with other Windows 95 and Windows NT devices.

The PDA market needs Microsoft's presence. Only 480,000 handhelds were sold worldwide last year, compared with 3.6 million notebooks in the U.S., according to Dataquest in San Jose, Calif.

Sources said some third-party OEMs plan to build hardware devices that use Windows CE. These include Compaq Computer Corp., Hewlett-Packard Co., NEC Technologies, Inc., Philips Consumer Electronics Co., Casio Computer Co. and LG Electronics, Inc.

Ardis Co., a wireless network provider in Lincolnshire, Ill., said last week it is working with Motorola, Inc. to develop wireless modem cards that support Windows CE.

The devices are expected to be announced at Comdex/Fall '96 in November and to cost between $500 and $1,000, sources said.

News Shorts

Tivoli, Intel cozy up

Intel Corp. in Santa Clara, Calif., and **IBM**'s Tivoli Systems, Inc. in Austin, Texas, are tightening links between their systems management products. They will further integrate Intel's LANDesk LAN management software with Tivoli Management Environment (TME), enterprise network management software. Intel will integrate some configuration and desktop management functions into TME.

PC price cuts continue

Dell Computer Corp. and **Compaq Computer Corp.** cut prices again last week, reflecting a continuing drop in component costs. Austin-based Dell dropped prices as much as 16% on its corporate desktop line, its fourth price cut this year. Houston-based Compaq dropped prices by as much as 19% on its ProSignia and ProLiant server lines and as much as 29% on some memory, power supply and disk drive options for servers.

IRS Cyberfile fails

The **Internal Revenue Service** last week threw in the towel on its troubled Cyberfile system for filing tax returns over the Internet. The **U.S. General Accounting Office** said the $17.1 million project was mismanaged, developed in violation of federal procurement regulations and installed in an insecure facility.

Java gets RAD tools

Symantec Corp. will soon release an application development tool for visual Java development. Visual Cafe's entire edit/compile/debug cycle is replaced by a rapid application development (RAD) cycle. A preview version for Windows is available free and can be downloaded at www. cafe.symantec.com. Visual Cafe will cost $199.95.

1G bit/sec. switches bow

GigaLabs, Inc. in Sunnyvale, Calif., this week will announce a pair of scalable LAN switches. The switches provide a 1G bit/sec. fat pipe, which gives users access to high-speed servers for data-intensive applications. The GigaStar 100 costs $200 per port. The larger GigaStar 2000 data center switch costs $15,000. Both will ship in late October.

AlphaServers pumped

Digital Equipment Corp. is shipping the AlphaServer 4000, a Windows NT system that replaces the AlphaServer 2000. The system features up to two 300- or 400-MHz Alpha processors and up to 4G bytes of memory. Prices for the product, which is aimed at high-capacity data marts, online transaction processing, enterprise electronic-mail and networking uses, start at $34,500 for a single-processor system with 128M bytes of memory and 4.3G bytes of hard disk space.

Interoperability sought

The Boston-based **OLAP Council** is releasing the first interoperability standard to give companies with a mixed environment the ability to easily access and manage data among different products. OLAP software was designed for fast analysis of multidimensional data. The council is posting the spec on its Web site (www.olapcouncil.org) starting today for a 90-day comment period. The final written specification is due by December and could start showing up in commercial software products by April 1997.

Coke to expand IS

The Coca-Cola Co. is launching a multimillion-dollar expansion and upgrade of its management information system over the next five to seven years. The Atlanta soft drink giant will get help from Ernst & Young for consulting services. It picked SAP AG for software improvements.

Panix attack

A New York Internet service provider came under attack last week by an unknown hacker. **Public Access Network Corp.**, or Panix, has been beseiged since Sept. 6 by a barrage of "mail bombs," queries sent every few seconds to the firm's mail, news and World Wide Web servers that overload the system. The only way to stop such attacks is to shut down a service altogether or enlist the help of Internet service providers around the country to track down the anonymous hacker.

SHORT TAKES Statistical software maker **SPSS, Inc.** has agreed to buy flowchart software developer **Clear Software, Inc.** for $4.5 million.... **O'Reilly & Associates, Inc.** in Sebastapol, Calif., plans to bundle its WebSite World Wide Web server with **Corel, Inc.**'s Web.Graphics suite of development tools for $299.... **Novell, Inc.** will begin shipping its E-mail upgrade, GroupWise 5.0, next month with the same pricing as GroupWise 4.1.

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Inside Computerworld

Sept. 16, 1996

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Breaking News

Free-where?
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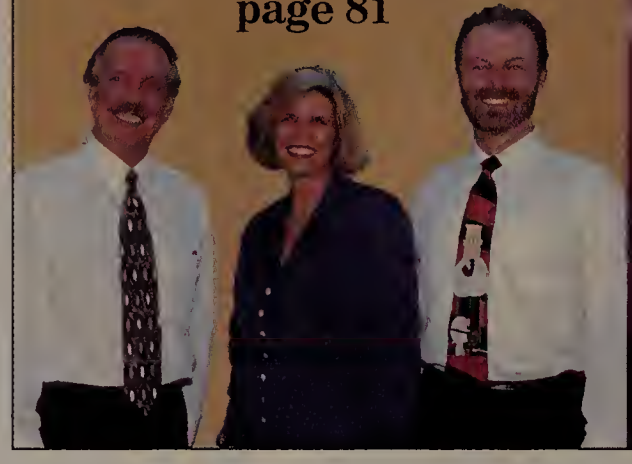
www.computerworld.com

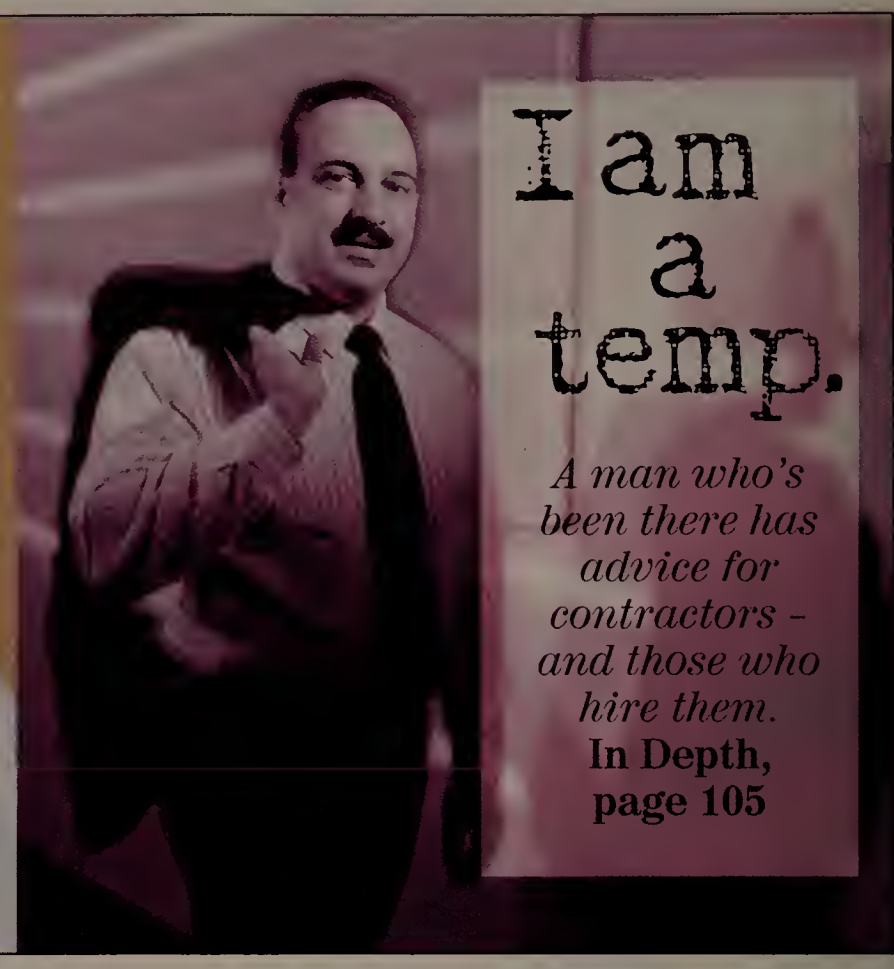
Forum: Mainframes, anyone?
Will IBM's newest minimainframe appeal to anyone outside Big Blue's installed base?
www.computerworld.com

QuickPoll: The usefulness of user groups
The death of the venerable Boston Computer Society raises the question: Does anyone get anything out of user groups anymore?
www.computerworld.com/forums/
www.computerworld.com

Choice Cuts

Scottsdale, Arizona's *pioneering use of its geographic information system has really paid off in additional revenue and cost savings.*
Corporate Strategies, page 81





I am a temp.

A man who's been there has advice for contractors – and those who hire them.
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An IS contractor tells it like it is.

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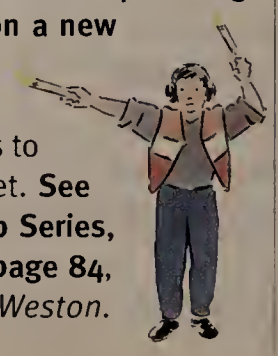
Two generations of IS professionals reflect on where the industry has been and will head.

Leadership series

• IS executives are providing direction on a new issue: managing user access to the Internet. **See Leadership Series, following page 84,** *by Randy Weston.*



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Some users are sipping Java slowly

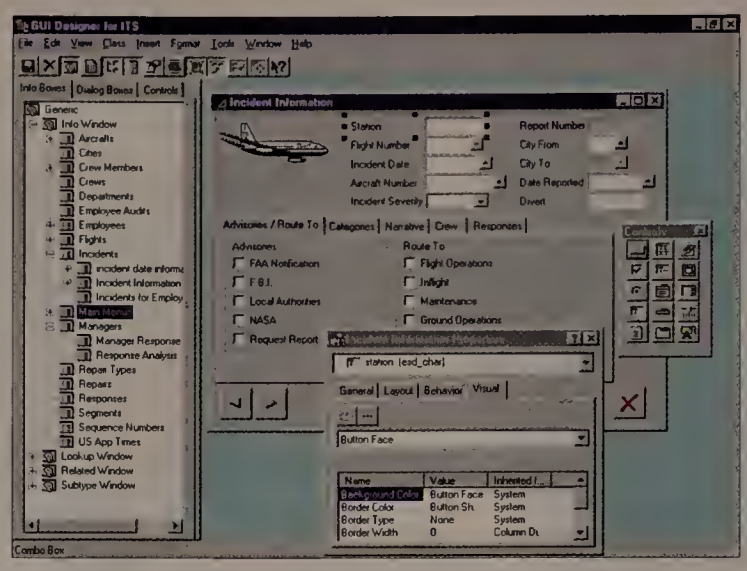
By Frank Hayes

Software development vendors are scrambling to roll out tool sets that support the World Wide Web and Java. But some users are beginning to wonder what the big hurry is.

Symantec Corp. last week released a beta version of Visual Cafe, its rapid-development environment for Java. This week, Unisys Corp. spin-off USoft Corp. in McLean, Va., will announce Java and Web page-generating capabilities for USoft Developer, the company's three-tier development system. And by the end of the month, Sybase, Inc. will ship Web.pb, the Web connection for its PowerBuilder development system.

But some corporate developers said they think the rush has outpaced reality.

"We haven't even looked at Web.pb, though we know it's out there," said Doug Coker, information systems manager at Price Waterhouse LLP's tax technology group in Chicago, a PowerBuilder shop. "This big push to link everything to the Internet is mostly media hype. In reality, it's going to be much slower."



USoft will add the ability *to generate Java applets to its USoft Developer visual tool set beginning in November*

Many corporate development shops are taking a go-slow approach to abandoning client/server tools in favor of Web and Java tools. One reason is the high cost of retraining developers and rewriting applications.

Developers said they hope Web-based add-ons such as Web.pb will make those painful transitions unnecessary.

Another concern is whether off-the-shelf Java components will be available that are similar to the VBX and ActiveX components for Microsoft Corp.'s Visual Basic and PowerBuilder.

"Every third party in the world makes whiz-bang widgets for Visual Basic," said Randolph Harrison, president of RLj Consulting Ltd. in Chicago. "Everybody's hedging very heavily on what's going to be the replacement for that."

Harrison's developers build Java-based projects for Baby Bell Ameritech Corp. in Chicago, but they build a lot more Visual Basic applications, he said.

"Right now, most of [our development work] is Visual Basic, and you use Java where you have to," Harrison said.

"There's been a lot of hype, obviously, and we're not using [Web-based applications] right now," said Bob Brown, vice president of business improvement and information services at the Burlington Klopman Fabrics division of Burlington Industries, Inc. in Greensboro, N.C. "But from a business perspective, [the Web's] value is growing almost daily, and over the next couple of years, it is going to be very important."

For Burlington Klopman, that value comes from better communication with customers and consumers as well as within the company, Brown said.

Lines blur between internal, external nets

By Mitch Wagner
ANAHEIM, CALIF.

The big news out of the Internet Commerce Expo (ICE) here last week was that the intranet is dead. The Internet, too, for that matter. Gone. Bye-bye. Call the preacher and start shoveling on the dirt.

Or, at least, the intranet and Internet are dead as we know them: two separate entities — one inside the corporation and one out in the public world — separated by an impenetrable firewall.

Electronic commerce

Instead, companies that do business on the Internet will find they must build strong links between information located inside the firewall and the outside world. Such connectivity carries security risks — but also great rewards.

Wells Fargo & Co. in San Francisco already ties the Internet to its internal banking systems so customers can get account information, transfer funds and pay bills online [CW, July 29].

"We've been doing business on the wild and woolly frontier since 1852. There's money to be made," said William S. Finklestein, chief scientist at Wells Fargo. "[But] we have meticulous security."

By connecting internal information to the Internet, a company can provide customized information to its customers and various business partners, said attendees at ICE, which is sponsored by International Data Group, *Computerworld*'s parent company.

Take Mag-Tek, Inc., for instance. The Carson, Calif., company makes equipment for reading magnetic strips on cards. It is putting its business procedures on an intranet site. It hopes to eventually publish key portions on the Internet to help its vendors and other business partners be more knowledgeable about the company, webmaster Brenda Schultz said.

The trick is to put enough information on the 'net to satisfy business partners and customers without revealing proprietary information to competitors, Schultz said.

Linking internal systems to the Internet helps ensure that information accessed by customers is up to date, said Irving Wladawsky-Berger, vice president of the Internet division at IBM. Federal Express Corp. does so to give customers up-to-the-minute information on package status.

Intranet applications should be designed with accessibility in mind, even if there are no plans to make the applications accessible outside the corporation, said Jim Barksdale, CEO of Netscape Communications Corp.

Hacker with a cause?

CNet reporter breaks in to sites

By Mitch Wagner

Employees at CNet, Inc. broke in to two commercial Internet sites last week and made off with credit-card numbers and other proprietary information. They said they did it to prove the fragility of security on the Internet.

A reporter and a member of the technical staff at CNet's *News.Com* online newspaper broke in to BookSite (booksite.com) and copied a list of credit-card numbers submitted by customers. They also broke in to *Upside* magazine's site (www.upside.com) and obtained *Upside*'s electronic mailing list and a list of people who had applied for subscriptions online.

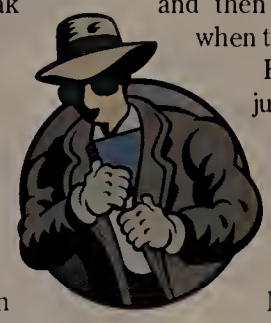
It was easy

CNet said it planned the break-ins to show how easy they are to do and that unless webmasters are careful, their sites could be easy prey for criminals. Previous disclosures about troubles with Java security or Netscape Communications Corp.'s encryption schemes have often been based on scientific studies. But CNet wanted to show that break-ins on the Internet aren't just an academic theory but rather a real-world concern.

"It didn't require an Olympian effort to get into their site. Who knows how many other sites are out there set up this way?" said Nick Wingfield, the senior writer at *News.Com* who was involved.

CNet notified BookSite and *Upside* about the security holes and — assured the holes had been fixed — published an article last Monday about the break-ins.

The targets of the probe admitted to being embarrassed about how easy it was to break in to their sites.



"We were horrified that this happened to us and that we were named in the article," said Dick Harte, owner of Rutherford's Book Shoppe in Columbus, Ohio, which runs BookSite. "Security is very important to us."

The effect that the break-ins will have on Internet commerce overall is unknown, said Ken Alexander, vice president of Internet banking systems at the Long Island Savings Bank, in Melville, N.Y. On the one hand, the break-ins could scare business off the Internet if they get a lot of publicity. But on the other hand, many people are already afraid of Internet commerce, and it's hard to imagine making them more leery, Alexander said.

The break-ins used a hole in a database server from Thunderstone Software in Cleveland, which is used by both sites.

A member of the technical staff at CNet whom Wingfield wouldn't identify discovered the security hole at *Upside* and collected the subscriber lists.

Not surprisingly, there has been some finger-pointing.

Bart Richards, CEO at Thunderstone, said the managers of both sites had Thunderstone's built-in security switched off while they alpha-tested their sites and then failed to switch it on when the sites went live.

Harte agreed. "This was just a plain screw-up," he said. "We left a door unlocked, and CNet found it."

But Eric Nee, editor in chief at *Upside* in San Mateo, Calif., said Thunderstone set up and administers the *Upside* Web site. Richards responded that Thunderstone doesn't administer the database where the break-in occurred.

The targets of the break-ins criticized the CNet staff's methods.

"I have to question why they're going around hacking into other people's servers," Nee said. "Is that an appropriate thing for them to do?"

Richards noted that CNet employees broke in to the sites illegally — even if they did so in good cause.

"I don't think it is in any case legal to perform a criminal act under the premise of journalism," Richards said.

Boston Computer Society folds; users fight on

By Matt Hamblen

The Boston Computer Society's (BCS) decision to dissolve last week after nearly two decades met with a resounding thud among its 18,000 users and members, some of whom vowed to continue with their special interest groups. But BCS officials described the group's demise as natural.

"Any organization based on a technology is going to have to change or die, and we didn't change fast enough. BCS doesn't have a clear mission anymore," BCS board member Louise Reilly Sacco said after the board's unanimous vote to cease operations.

Since 1992, membership has been falling at a rate of 10% to 15% per year, according to the BCS.

However, a strong factor in the group's demise was its financial problems. In 1991, the nonprofit BCS had a $1 million surplus, but the group slipped to $125,000 in the red for its fiscal year ended June 1995. A year later, the BCS has a slim $1,700 in the bank, BCS officials said.

BCS founder Jonathan Rotenberg *says the group had 'ceased to be effective'*

Interim Executive Director Frank Smith dismissed charges of mismanagement and predicted that when the books close, BCS will have no significant debts.

Search for a future

The group also has had trouble defining its mission. Pam Bybell resigned as executive director in May, after only 18 months on the job [CW, May 27]. Her replacement, Smith, was hired on a three-month contract but found the board, staff and volunteers unable to come together on what the BCS mission should be.

There was debate over whether BCS should continue as an umbrella group of 100-plus special interest groups or turn into a public service organization.

The first — and once premier — computer users group, the BCS was founded in 1977 by 13-year-old Jonathan Rotenberg. At its peak in the early 1990s, the group had 32,000 members worldwide. As of last week, membership was down to 18,000.

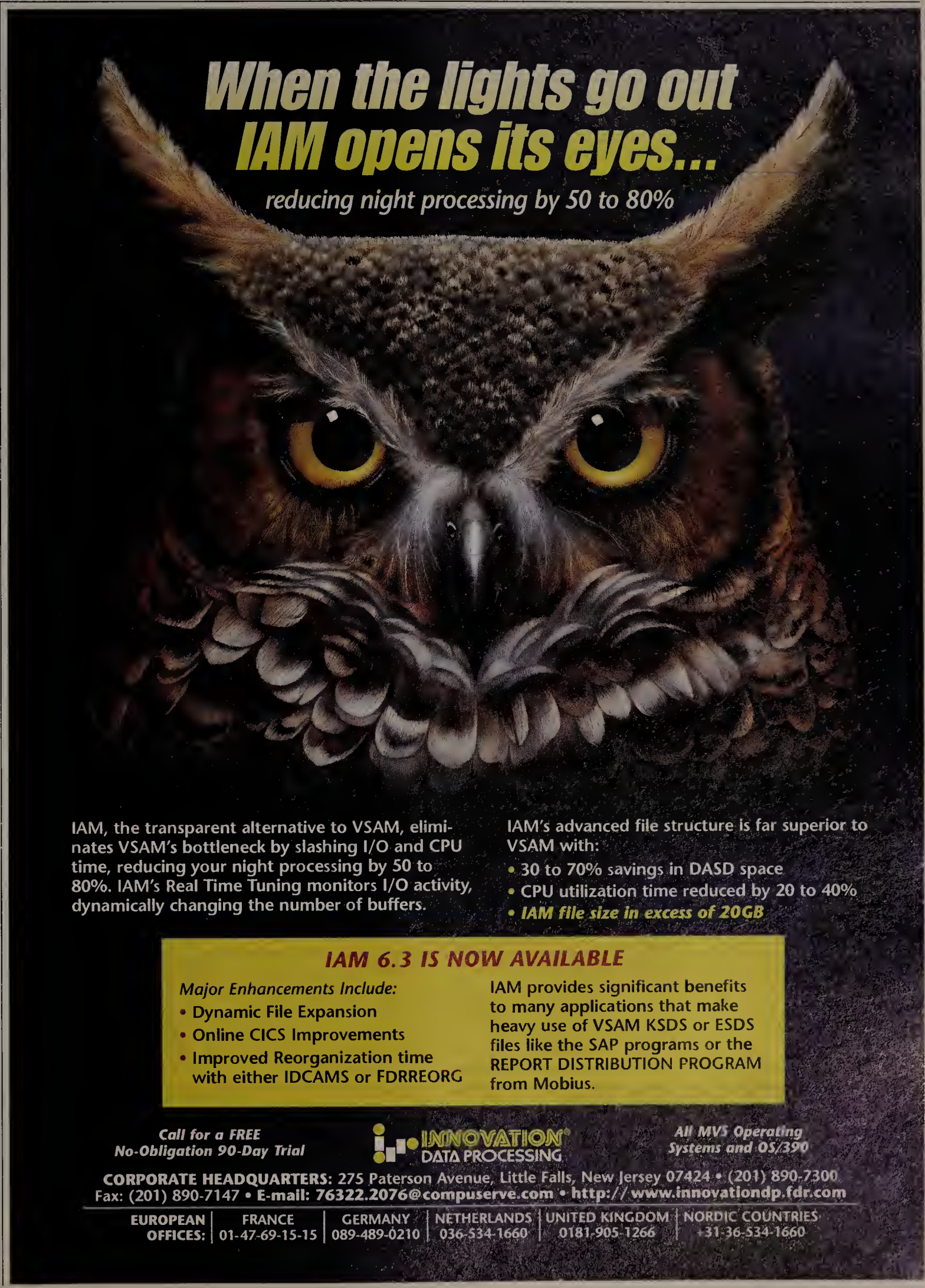
The BCS demise saddened Rotenberg, but he said the organization had "ceased to be effective."

"BCS made sense when there were limited alternatives," but with courses offered by computer superstores and quick fixes available for free on the Internet, along with dozens of magazines and other places for computer makers to advertise, it was too difficult for the BCS to compete, Rotenberg said.

"It seems unnecessary that it should die," said retired engineer and member William B. Smith, who is unrelated to Frank Smith. "The resources are very considerable, and there's still a lot of enthusiasm. It's probable there will be an effort to revive it."

BCS officials are less optimistic but said they will help individual user groups carry on by providing communications and sharing user names. At its Web site last week (www.bcs.org), several special interest groups, including Linux/Unix, Lotus Notes, Web and Virtual Reality groups, posted notes of their plans to continue.

Jerry Schneider, a computer consultant in Burke, Va., who founded the International Association of PC Users Groups, said widespread death of user groups is unlikely. "In general, user groups are healthy, although they have been changing," he said.



HP puts Unix servers into the 64-bit arena

By Jaikumar Vijayan

Users looking for increased performance from Hewlett-Packard Co.'s Unix servers got what they wanted last week with the company's first 64-bit server offerings.

The Palo Alto, Calif.-based company beefed up its entire HP-9000 commercial Unix server lineup with its powerful 180- and 200-MHz PA-8000 64-bit chip.

With this announcement, HP joins a handful of other vendors — including Sun Microsystems, Inc., Digital Equipment Corp. and IBM — in offering similar 64-bit hardware. These 64-bit platforms can support faster performance, larger memory capacities and file sizes and substantially larger applications than 32-bit architectures.

But limited operating system and 64-bit application support means users won't be able to derive the full benefits of a 64-bit architecture for quite some time [CW, July 22].

For most HP users, the real relevance of last week's announcement will be their ability to run current 32-bit applications much faster and make it scale much further than 32-bit hardware permits.

"We have seen a marked improvement in throughput at the CPU level, and the transaction processing is significantly improved," compared with the previous PA-7200 chip, said John Armstrong, a team leader for HP operations with Electronic Data Systems Corp. at the GMAC Mortgage Data Center in Horsham, Pa. GMAC is a beta user of the PA-8000 and recently upgraded a quad-processor PA-7200 server with the new 64-bit chip.

"It is a very positive announcement from HP," said Gary Spencer, chief information officer at True Temper Sports, a Memphis-based subsidiary of Black & Decker Corp.

"These servers are capable of supporting more processors and more transactions per second than our current servers," he said. This gives the company a growth path as application needs increase, he said.

"HP is really pushing forward with its 64-bit architecture and challenging vendors like Digital and Sun" in the midrange Unix space, said Bill Moran, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

"This is very good news for longtime HP users," agreed Jean S. Bozman, an analyst at International Data Corp. in Mountain View, Calif.

HP's 64-bit K-class server range

Processors	Memory	Storage	Price
Up to four 160-MHz PA-8000s	128M bytes to 2G bytes	Up to 3.8T bytes	$52,200
Up to four 180-MHz PA-8000s	128M bytes to 4G bytes	Up to 8.3T bytes	$77,200

Tools automate data massaging

By Craig Stedman

Ready-to-go data warehouse tools will take center stage this week at Digital Consulting, Inc.'s (DCI) Data Warehousing Conference in Phoenix.

Microsoft Corp., Sybase, Inc., SAS Institute, Inc. and Oracle Corp. will announce plans for automating more of the process of building and updating data warehouses and their smaller brethren, data marts. The goal is to reduce the manual coding and data extraction work that information systems departments face.

"It's time for people to get out of the forklifting of data," said Doug Lynn, an analyst at Meta Group, Inc. in Stamford, Conn. As customers expand the number of their data warehouses and data marts, "they don't want to bulk up their IS staffs" just to feed the growing beast, Lynn said.

But tools for creating a fully automated flow of information between operational databases and data warehouses are still in their infancy, Lynn said. It may take another 12 to 18 months for the whole notion to filter in to the mainstream of the warehousing market, he said.

The concept of front-to-back data warehouse tools appeals to Roger Theriault, who is leading a warehousing project at National Medical Care, Inc. in Waltham, Mass. But he said what he has looked at so far doesn't measure up to the promises made by vendors.

"There just isn't anything that does all of this for you," Theriault said. "There's no silver bullet."

National Medical Care is building a data warehouse for caching patient data and other information from the 650 kidney dialysis centers that it operates in the U.S. The process of loading and updating the warehouse is being automated "because I don't want to sit in front of a tube at four in the morning kicking off these programs," Theriault said.

Among the show highlights are the following:

Data warehousing conference

- Microsoft will announce a warehousing framework for its SQL Server database that includes integration deals with nine software vendors, sources said. As part of the ActiveDW framework, Microsoft also plans to ship data transformation and metadata repository tools by mid-1997, the sources said. Customers still will have to buy software from the vendors that are teaming up with Microsoft. But Microsoft says all the separate pieces "will fit tightly together" out of the box, said Judith Hurwitz, president of Hurwitz Group, Inc. in Newton, Mass.
- Sybase will introduce a one-stop warehouse offering that combines its Sybase IQ database and Replication Server software with Informatica Corp.'s PowerMart tools for extracting and loading client/server data.
- SAS will announce SAS/Warehouse Administrator, which integrates its tools for building and managing data warehouses.

Union Pacific Railroad's data warehouse:

- Anticipates which rails will need replacement.
- Monitors the wear and tear on locomotives
- Increases the use of its own freight cars, cutting down on rented cars.
- Projects the financial impact of union proposals.
- Cuts payments of sales taxes to states where they aren't required.

Union Pacific RR tracks decision-support benefits

$20 million investment begins to pay off

By Michael Goldberg
CHICAGO

At Union Pacific Railroad, most of the company's assets are in motion — locomotives, the workers who run them, the freight that rumbles on the rails.

By building a data warehouse, managers at the $5 billion company have gained better control over thousands of moving targets.

Make no mistake: Union Pacific has paid real money — an estimated $7.5 million this year and about $20 million since 1992 — for one information systems project. That covered hardware from NCR Corp., systems integration work, consultants' fees and staff training — lots of classes for a growing base of 1,700 end users.

And there are ongoing technical challenges such as maintaining a data warehouse that grows daily at the Omaha-based railroad.

But the benefits have more than paid for the investment, with improved management of freight cars, better maintenance of locomotives and new expense projections that reduce waste (see chart above).

Although cost/benefit ratios vary, Union Pacific's experience was emblematic at a Commercial Parallel Processing conference here last week that highlighted data warehouse projects.

The ongoing investment required by a data warehouse can frighten executives.

Uniting varied departments around a common view of corporate data is a challenge. And the immaturity of the technology, especially tools to care and feed these large systems, makes the ongoing work tricky as firms look for information that cuts costs or adds revenue.

Donald Groesser, a senior information technology manager at Union Pacific, said the cost to manage a gigabyte of data has dropped from $46,000 four years ago to $6,000 today.

Even so, "our management was unprepared for the dollar spending," Groesser said.

"We had to get them ready [for the idea] that there's not always a benefit to every piece of data. You have to show the [overall] benefits and keep in contact with your customers" about the information they need, he said.

Seeking support

More companies, large and small, are spending more for this kind of decision-support project.

Gartner Group, Inc. analysts last year estimated the data warehouse market would grow from $1 billion per year to $5 billion by 1998. Gartner's projection this year calls for a nearly $7 billion market in 1999, a trend that has caught the attention of vendors selling hardware, software and services.

Still, analysts and users said vendors need to make the technology easier to handle.

Observers expect more sophisticated tools to automate data warehouse maintenance and to help users cleanse historical data that comes in different shapes and sizes from different departments.

More work

Union Pacific Corp., the railroad's parent company, was due to complete its takeover of Southern Pacific Railroad last week. This merger should increase the railroad's data warehouse project by 60%, said Donald Groesser, a senior IT manager at Union Pacific.

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Changes to Exchange target enterprise

By Tim Ouellette
AUSTIN, TEXAS

Microsoft Corp. early next year will give enterprise customers who are considering a major rollout of Exchange Server electronic mail more reason to believe.

At the Exchange Deployment Conference here last week, the Redmond, Wash., firm revealed plans to do the following:

- Remove the 16G-byte message storage limit found on each Exchange server.
- Improve how Exchange handles user-created rules.
- Make Exchange a viable workflow engine for high-level, mail-based work processing.
- Upgrade Exchange's performance on symmetrical multiprocessing servers.

Other planned improvements — clustering support and an improved directory service — depend on the next upgrade to NT Server, Exchange's only server platform.

All of the above features will not be part of Exchange 4.5, due later this year, but of a further release in 1997. Exchange 4.5 will provide support for several Internet messaging, directory and World Wide Web browsing protocols (see chart).

Although none of the early users interviewed by *Computerworld* has hit the 16G-byte storage limit yet, it is still an area of concern for companies with thousands of E-mail users. And users are also concerned because future E-mail plans call for the ability to carry and store bulky image, graphics and video files [CW, Aug. 12].

Exchange game plan

Product	Features
Exchange 4.5 *Late 1996*	Supports Internet protocols for E-mail, directories and news readers
Service Pack *Early 1997*	Adds support for Internet Mail Access Protocol
Exchange 4.x *1997*	16T-byte storage capacity, workflow capability, improved SMP support

Users are depending on those improvements to achieve large rollouts. But so far, Microsoft estimates that 750,000 seats of Exchange have been installed. And it plans to announce a couple of deals with more than 100,000 user licenses each.

Dun & Bradstreet Corp. is moving 32,000 Microsoft Mail users to Exchange and is counting on it to become the backbone of companywide E-mail applications.

With its old Microsoft Mail system, "when it got to things like payroll — mission-critical things — it started to make us nervous," said Don Smith, director of information systems at the Wilton, Conn., firm.

"The key drivers for us in choosing Exchange were industrial strength, global operation and large volume," said Todd Carlson, chief information officer at Electronic Data Systems Corp. in Dallas. EDS plans eventually to put 95,000 users on Exchange.

To increase Exchange's message storage limit from 16G to 16T bytes, Microsoft won't toss out the underlying database that Exchange is built upon. Instead, it will change data structures and routines within the database to improve its storage limit.

Microsoft also allayed a concern voiced by several of the 2,500 conference attendees about a possibly costly client upgrade path for Exchange. Users will get Outlook, a 32-bit groupware, E-mail and scheduling client [CW, June 17], for free inside the Exchange 4.5 upgrade later this year.

Previously Outlook was expected to be available only as part of Office 97. So users were worried that they would have to purchase Office 97 and bulk up their desktops to handle the large but feature-rich client.

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Hurricane Fran puts IS to the test

By Thomas Hoffman

When the winds of Hurricane Fran roared down Tobacco Road at 120 miles per hour a few weeks ago, IS managers such as Dana Gantt faced it head-on.

Gantt, director of technical services at Liggett Group, Inc. in Durham, N.C., had to chainsaw through five trees just to get out of his cul-de-sac. Gantt didn't get much farther — more fallen trees awaited him down the road. But that was OK.

Liggett had planned for such disasters by ensuring that its four information systems staffers were trained to cover one another's technical disciplines. As a result, Liggett was able to continue processing customer orders with a two-person skeleton IS crew.

Gantt also dialed in to the cigarette maker's Hewlett-Packard Co. HP 9000 Unix servers from home at 2 a.m., during the height of the storm, to ensure that the company's systems were up and running.

Gantt did that merely for peace of mind — each of the company's four technicians are wired to the central computer systems with pagers that notify them if an uninterruptible power supply kicks in or if an air-conditioning unit fails.

AP/Wide World Photo

The aftermath of Hurricane Fran, North Topsail Beach, N.C. *Water damage and power outages caused headaches for the area's IS personnel*

Not everyone was as lucky. Hundreds of businesses in hard-hit areas, including Raleigh, N.C., and Alexandria, Va., were left without power for nearly a week. The Insurance Information Institute in New York estimated that the storm cost homes and businesses more than $1.6 billion.

Across town from Liggett, the city of Durham's MIS group lost five minicomputers to water damage and was left without power for three days, said Martha Lester, associate director of MIS.

The outage prevented the city's Unisys Corp. A11 mainframe from processing its normal volume of 25,000 to 50,000 daily residential and commercial water bills.

To catch up once the system was back online, the city had to calculate bills based on customers' historical monthly consumption. Any discrepancies will have to be adjusted later, Lester said.

Post-storm problems

For some in IS, the biggest problems occurred after Fran had blown by.

For example, Hardee's Food Systems, the IS arm of the fast-food restaurant chain in Rocky Mount, N.C., had trouble polling its 3,200 outlets for their receipts after tree trimmers sliced through a Sprint Corp. fiber-optic cable, said Peter Hill, Hardee's vice president of information services (see related story, page 1).

Hardee's eventually bypassed the fiber-optic glitch, thanks to an "overflow" long-distance agreement it has with MCI Communications Corp., Hill said.

Many IS professionals had to work around disruptions.

Joe Barrow, manager of operations at an Electronic Data Systems Corp. facility in Raleigh, was forced to shower at work all week before power was restored to his home across town.

Others took a more earthy approach.

"Our IS staff came in dirty. We came in jeans. We came in any way we could," said Mary Frye, manager of electronic data processing at Queensboro Steel Corp. in Wilmington, N.C.

Disaster recovery put to the test

Hurricane Fran had the industry's top disaster-recovery services vendors in a whirl last week. The following incidents were reported:

- **Comdisco Disaster Recovery Services, Inc.** in Rosemont, Ill., reported that four customers in north Florida declared disasters. The customers, which included clients in the banking, insurance and business services industries, had to back up their IBM ES/9000 mainframe, IBM AS/400 midrange and LAN/WAN systems.
- **IBM Business Recovery Services** in Sterling Forest, N.Y., had 10 customers declare disasters. But seven of those customers rescinded their declarations after they escaped the wrath of the storm. Only one customer — a dental supply chain in Savannah, Ga. — actually ran its computer operations through IBM and only did so for testing.
- Another 35 customers put **Sungard Recovery Services, Inc.** on alert, while two IBM AS/400 manufacturing customers declared disasters with the Wayne, Pa.-based service provider. One manufacturer was still without power after seven days and was running its computer operations on a Sungard-provided diesel generator. — *Thomas Hoffman*

Textron calls on AT&T in network outsourcing deal

By Kim Girard

Textron, Inc. expects to save $125 million over the next decade by handing over management of its global network to AT&T Solutions.

And Textron's savings are AT&T's gain. AT&T expects to reap $1.1 billion in revenue from its biggest network outsourcing deal to date.

"It's a huge deal," said Allie Young, a senior analyst at Dataquest Worldwide Services in Westboro, Mass. "This is one of those megadeals." AT&T will manage Textron's voice, video and data needs, including LANs, the wide-area network and electronic mail.

Terry White, senior director at InfoTech Consulting in Parsippany, N.J., said Textron is bucking the trend toward shorter contracts with multiple carriers by making a 10-year commitment to one vendor.

White said with all the uncertainty surrounding telecommunications deregulation, most companies are reluctant to get locked in. "My guess is there was a very strong client relationship between the two companies," he said. "As a result, Textron had a lot of confidence that AT&T could do this and do it effectively."

Easing acquisitions

Textron decided to outsource partly to ease the pain of integrating new sites as the company's acquisitions multiply, said William Gauld, chief information officer at Textron.

As the company has added locations from Malaysia to Mexico, linking them to the U.S. network has proved time-consuming because of different technologies and infrastructures.

"It's very difficult to predict when acquisitions occur, and when you close the deal, you need to quickly integrate," Gauld said. "We can do that, but it's a matter of how long it would take. And in today's environment, speed is critical to us."

With a more tightly integrated global network, Gauld said, Providence, R.I.-based Textron expects to generate 35% of its revenue from outside the U.S. by the year 2000.

Textron has 25 divisions worldwide in five business segments: aircraft, automotive, industrial, systems and components, and finance.

Under the contract, AT&T will upgrade and expand Textron's router-based frame-relay network.

Converting most of the network to frame relay is the goal, and work on about half the sites is under way, Gauld said.

Benefits for Textron

- Estimated savings of $125 million by consolidating contracts over the next 10 years
- Faster network integration of new sites acquired by the conglomerate
- Remote and on-site network troubleshooting
- Global Client Support Center in Durham, N.C.
- Construction of a united global frame-relay network
- Assistance building a corporate intranet and electronic commerce system

"[The project is] like taking apart a 747 and putting it back together," said Rick Roscitt, a managing partner for outsourcing at AT&T Solutions.

Textron is also developing a corporate intranet and running an electronic commerce pilot internally.

Under terms of the deal, a core of Textron networking engineers will be hired as AT&T employees, more staff members will be brought on board and some AT&T employees will be assigned to the project.

End-to-end management will be handled from AT&T Solution's new global client support center in Durham, N.C., from which congestion patterns can be predicted and the condition of routers and public branch exchanges can be monitored.

Gauld said Textron chose AT&T instead of British Telecommunications PLC, the only other contender for the job, because most of Textron's networking traffic is in the U.S., where AT&T has been predominant.

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Users set for networking nirvana

By Computerworld staff

Once a LAN-only conference, this week's Networld/Interop '96 show in Atlanta will showcase everything from turbocharged remote access servers to network management.

Users can expect a full-court press on LAN switching products with Gigabit Ethernet connections and a lot of discussion on the role of the Internet and intranets in corporate America.

Eric Schmidt, Sun Microsystems, Inc.'s chief technology officer, will give a keynote address titled "Evolution or Revolution? The Future of Network Computing." Irving Wladawsky-Berger, general manager at IBM's Internet division, will speak on "The Center of Gravity for the Internet: Server or Desktop?"

Among the many major networking vendors that will use the decade-old show to roll out products are 3Com Corp., U.S. Robotics Access Corp., Microsoft Corp. and Cascade Communications Corp. — all covering a range of topics (see related story, page 57).

Nissan Motor GB Ltd. *uses 3Com's OfficeConnect products to support a multimedia dealer communications system*

Gigabit Ethernet

Plaintree Systems, Inc. in Waltham, Mass., will announce the WaveSwitch 9000, a high-end data center switch that can be equipped with Gigabit Ethernet uplinks. Its backplane will have a capacity of roughly 16G bit/sec. The WaveSwitch 9000 will ship early next year. Pricing hasn't been set.

Branch-office networks

3Com will unveil a low-cost Ethernet switch that can be included in its OfficeConnect stack of networking products. OfficeConnect targets sites with 20 or fewer PCs. It enables users at remote sites to mix hubs, wide-area network gateways, fax machines, CD-ROM servers, print servers and routers in a stack. 3Com competes aggressively with Hewlett-Packard Co. in this market.

The OfficeConnect Switch 140 has four switched Ethernet ports that allow firms to run a dedicated 10M bit/sec. uplink to the desktop and one 100M bit/sec. uplink to connect them to other hubs, said sources briefed by Santa Clara, Calif.-based 3Com. This first OfficeConnect switch will ship in November. It will cost $1,495.

Carrier services

Cascade will unveil two systems designed to enable information systems managers to off-load the chores of remote access to carriers.

The Westford, Mass., company's switches are the AX 800 ($27,500 to $200,000) and the higher-end AX 1600 ($32,500 to $485,000), which can handle up to 672 digital modems or up to 1,344 Integrated Services Digital Network (ISDN) connections on one shelf. Both will ship in the fourth quarter.

Network management

SunSoft, Inc. will detail the expansion of the Solstice Enterprise Manager. Besides grooming the enterprise network management platform for easier configuration and use, the Mountain View, Calif., vendor will add multivendor support and tools for managing security, electronic mail and systems. Shipment and pricing information wasn't available.

Bay Networks, Inc. in Santa Clara, Calif., will demonstrate single-console control over mixed voice, video and data networks with the help of partner **Lucent Technologies, Inc.** Bay and Lucent integrated Bay's Optivity Enterprise network manager for hubs, switches and routers with Lucent's Definity manager for communications servers.

The combination will be available from Lucent as OneVision. It will also be available with Version 7.1 of Optivity, due in November. Pricing will be based on configuration.

Remote access

U.S. Robotics in Skokie, Ill., will announce the NetServer/8 I-modem and NetServer/16 I-modem remote access servers. The servers can support analog or ISDN calls on every port.

The products were designed for small to medium-size sites that use ISDN but must maintain analog access to remote users. NetServer/8 costs $8,995, and NetServer/16 costs $13,995.

Multimedia

Microsoft in Redmond, Wash., will unwrap NetShow software, which can be downloaded from the Internet for free to help network managers use multimedia tools.

NetShow includes ways to develop live and on-demand services and provides content creation tools, including synchronization of audio and video. It was designed to provide efficient transmission of live events, speeches and meetings over a corporate network.

Internet, net management top attendees' agenda

Computerworld *staff last week polled a handful of the expected 60,000 attendees at this week's Networld/Interop in Atlanta. We asked users why they are going and what they expect to find. Most want to see a smorgasboard of products in action and talk to the engineers working on them. Network management and the Internet were hot topics.*

Steve Lopez, network manager at the National Board of Medical Examiners in Philadelphia:

"Networld/Interop is the only place in this world where I can get my hands on everything I need to see under one roof. When I'm considering a technology, I can find five vendors that have it on the show floor, visit their booths and talk to their engineers. I've solved many a problem by spending a whole day on the show floor, and I often make buying decisions from my hotel room. That's the biggest business benefit I get out of the show."

Gary Wilkerson, program and external services administrator at Kaiser Foundation Health Plan, Inc. in Atlanta:

"I go mainly to look at Internet strategies. I'm going to network, and I'm looking to purchase tools to make Internet development easier — i.e., how to access databases from the Internet and how to do interactive [World Wide] Web development. My boss expects me to go to Interop and come back with a long-term strategic direction for our Internet/intranet deployment."

John Scoggin, director of network operations at Delmarva Power & Light Co. in Newark, Del.:

"I go to the show to evaluate network management systems — ones that go beyond [Simple Network Management Protocol]. That's a big need we have today. I read about all the latest and greatest products and technologies and go to the show to see them in action and talk to the engineers working on them."

Peter Rubicam, first vice president at Dean Witter Reynolds, Inc. in New York:

"For me, Interop is all about networking of the people kind so I can increase my industry contacts. Secondarily, it's a fact-finding expedition and a chance to check out the new products."

Scott Parker, supervisor of networking support at Turner Broadcasting System, Inc. in Atlanta:

"I want an update on two network building blocks — the next versions of TCP/IP and the Simple Network Management Protocol. I'm trying to find out when we'll have to convert our network addressing and when we can take advantage of new management functions, like secure and more efficient polling."

Parker said he particularly is seeking tools to help manage service. For example, he said he wants to give users and the help desk some idea of the time required to deliver electronic mail between Atlanta and sites around the world or how long network repairs should take.

Mons Ellingson, leader of the network management engineering group at Arizona Public Service Co. in Phoenix:

"It's a great way to try all the new management tools, see the latest internetworking gear and catch up with networking technology."

CA backs desktop management standard

By Patrick Dryden

Computer Associates International, Inc. this week will unveil support for a key desktop management standard at Networld/Interop '96 in Atlanta. This will enable CA-Unicenter users to cut costs and maintain freedom of choice as they extend the systems management platform's reach.

Support for the Desktop Management Task Force's Desktop Management Interface (DMI) should also let users preserve their investment in LAN software and skills, while giving central managers a single point of control.

> "Maybe it will help some shops, but we like to keep management of the Unix environment separate from the LANs, and we have no plans to merge them."
>
> *Charles Lomino, Unix systems administrator, Ann Taylor Stores*

The Unicenter platform is geared toward maintaining larger systems and critical business applications throughout an enterprise network.

CA this week will join the task force, a PC-centric vendor consortium that is developing ways to control unruly systems at the end of corporate network connections. By adopting the task force's interface standards for its platform, CA can open up current or future versions of Unicenter to workgroup-level tools that support DMI 2.0.

"Unicenter users can completely integrate the desktop manager of their choice without writing a line of code," said Sam Greenblatt, vice president of advanced technology at CA in Islandia, N.Y.

These management options include packages such as Microsoft Corp.'s Systems Management Server, Intel Corp.'s LANDesk, Novell, Inc.'s ManageWise and Symantec Corp.'s Norton Desktop Administrator.

Hierarchy capabilities

"Linking to these tools lets CA users build a management hierarchy for the first time," said Ray Paquet, senior research analyst at Gartner Group, Inc. in Stamford, Conn.

Now departmental or branch-office staff can watch their workgroups with LANDesk, for example, and also pass information about station inventory or configuration up to a central point for monitoring or safekeeping, Paquet said.

DMI support gives CA a ready-made way for its central management platform to access local management tools without requiring special effort by users or vendors, said Paul Mason, director of the enterprise systems management program at International Data Corp. in Framingham, Mass.

By contrast, Tivoli Systems, Inc., the Austin, Texas-based management software division of IBM, requires vendors to adapt their tools to custom interfaces for the TME 10 framework.

Some CA users demanded central control for all systems, from large servers to thousands of desktops, Greenblatt said. But few users of any large-scale management platform are ready to take the necessary organizational and cultural steps to make such management work, Mason said.

That is the case at Ann Taylor Stores Corp., a Unicenter user in New York. CA's desktop plan "sounds like overkill," said Charles Lomino, Unix systems administrator at the retailer. "Maybe it will help some shops, but we like to keep management of the Unix environment separate from the LANs, and we have no plans to merge them."

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Net management tools are browser-bound

By Patrick Dryden

Network administrators cruising Networld/Interop '96 this week should look closely at screens displaying their favorite management tools.

Many familiar tools will appear on a browser screen for the first time instead of on the usual costly, complex and cumbersome console.

Meeting demand

3Com Corp., Bay Networks, Inc. and Cabletron Systems, Inc. will preview adaptations that can deliver reports anywhere via the World Wide Web. Users of management tools have been clamoring for this capability, so they can open up access to status and performance information.

At Baxter Healthcare Corp., for example, reports that track router utilization trends throughout the medical manufacturer's network remain stuck at the console running RouterPM from 3DV Technology, Inc. in Nashua, N.H.

"There's no easy way to move those reports around to everyone who could benefit from them," said Steve Tindall, infrastructure project manager at Baxter in Deerfield, Ill.

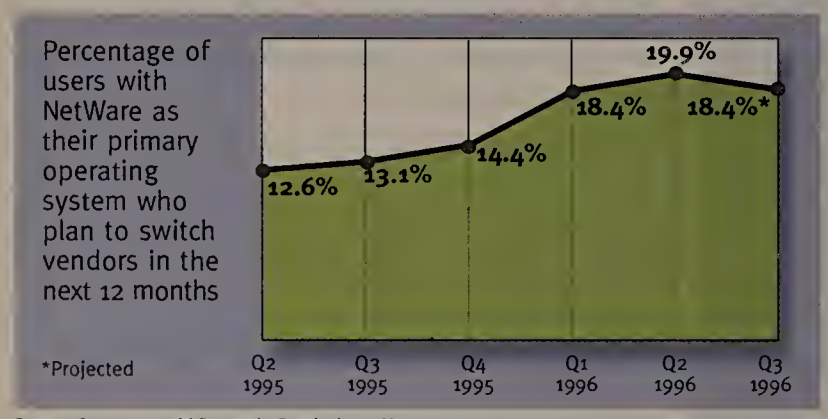
Instead of transferring files networkwide or copying them to a floppy disk, Tindall awaits the next version of RouterPM, which can publish those reports for browser access. "Getting Web support for all our tools would absolutely help us," he said.

> **"Getting Web support for our tools would absolutely help us."**
>
> — Steve Tindall, Baxter Healthcare

Vendors are starting to respond in the following ways:

- 3Com, in Santa Clara, Calif., will adapt Transcend, its tool for managing hubs, switches and other internetworking gear. Web support is scheduled to ship late this year.
- Bay Networks will demonstrate the ability to monitor its Optivity console and view reports on managed routers, hubs and switches. That support will be available in November in Optivity 7.1. Interactive capability — so managers can configure Bay Networks devices through a browser instead of a console — will come in two phases. The BayStack 100Base-T hub will get an embedded Web server. Agent software should support other products by early next year.
- Cabletron, in Rochester, N.H., will preview upcoming interactive capabilities that will require Web server support. They include the ability to query the SpectroRX case-based reasoning tool through Java applets, so managers can remotely evaluate recommendations for responding to problems, and the ability to interact with all Spectrum services through an information browser based on Microsoft Corp.'s ActiveX technology.
- Frontier Software Development, Inc. will demonstrate WebScout, an option for accessing more than 60 network performance trend reports from its NetScout Manager. It is slated to ship next month.
- Epilog Technology and SNMP Research International, Inc. will unveil tool kits that make Simple Network Management Protocol (SNMP) data available to any manager with a browser [CW, Sept. 9].

Novell users still loyal, but many hedge bets



Source: Computerworld Research, Framingham, Mass.

CONTINUED FROM PAGE 1

increasingly restive about Novell's long-term prospects as a network services, Internet and intranet company.

These concerns could spark defections to NT if Novell doesn't address them in the next six to 12 months. And Microsoft already has a foot in the door, with 40% of NetWare shops surveyed saying they use NT as an application server.

Slow ride

"It's a very confused market," said Duane Kelling, vice president of MIS at Erickson Consulting International in Minneapolis.

"We're sticking with NetWare, but I'm not betting my business solely on Novell. We've chosen a database vendor and 4GL language that will allow us to play in the NetWare, NT Server and Unix environments," he added.

Halkias too said he would prefer not to start over again with a new network operating system, and he isn't counting Novell out.

But Halkias said until he is sure that Novell is back on track, he won't upgrade from NetWare 4.1 to the new Green River 4.11 release.

"We use NT Server as an application server. For now, I'm playing Novell against Microsoft. I want Microsoft to improve NT Server's directory services and Novell to come up with a clear Internet and intranet strategy. Meanwhile, I have nothing to gain by spending money upgrading right now or switching to Windows NT," Halkias said.

That attitude doesn't bode well for Novell's revenue stream. And David Moschella, senior vice president of research at Computerworld Research in Framingham, Mass., noted that more than half of the staunch NetWare users surveyed said spending will be flat in the year ahead.

> **More than half the staunch NetWare users surveyed said spending will be flat in the year ahead.**

Fewer still said they are considering NetWare as their intranet server (see story below).

Among the 14% of NetWare users surveyed who said they were moving to Windows NT Server, the most oft-cited reason was the close integration with the Microsoft Office desktop application suite.

There was also a prevailing perception among those switching that a mass migration to NT Server was inevitable.

"We switched to NT because it offers better integration with other Microsoft Office packages. It just seems to be a Microsoft world," said Ed McBride Jr., an environmental scientist at the Air Division of the Alabama Department of Environmental Management in Montgomery, Ala.

The expected announcements at the trade show include the following:

- Novell will formally launch NetWare 4.11, also known as Green River, which features an automated file server crash recovery facility, improved TCP/IP protocol support, the NetWare Web Surfer integrated browser and Novell Directory Services support for Windows 95.
- IBM will take the wraps off its eight-way Symmetrical Multiprocessing (SMP) for OS/2 Warp Server platform.

SMP will provide users with more power, scalability and fault tolerance across enterprise networks.

- Microsoft will counter with the Distributed File System (DFS) facility for Windows NT 4.0, which debuted July 29.

DFS is an interim step up from Microsoft's current domain name services functionality while users wait for Cairo, NT Server's full-blown directory services engine expected to ship next year. DFS lets businesses create a single file server directory tree to more easily find, browse and access information in the directory.

NetWare by the numbers

A *Computerworld* poll of 2,500 Novell NetWare users confirmed some widely held beliefs and contained a few surprises and red flags for Novell. Survey highlights include the following:

- While 66% said they will remain loyal to NetWare, 30% indicated they are also deploying Windows NT Server as an application server.
- Only 12% said they were "very likely" to upgrade to NetWare 4.11 — code-named Green River — within a year.
- Of the 20% who said they are unsure about continuing with NetWare, 86% said they already use NT Server or are considering it.
- Roughly 7% of the respondents who said they will switch to NT Server said they will slowly replace NetWare over a period of several years.
- Only 2.5% said they are quickly replacing NetWare with Windows NT Server.
- Some 38% of the NetWare shops said they will deploy Novell Directory Services in the next 12 months.
- Fully 77% of the self-described Novell loyalists said there was no chance or a slight chance that they would use NetWare as their intranet server in the next 12 months. — *Laura DiDio*

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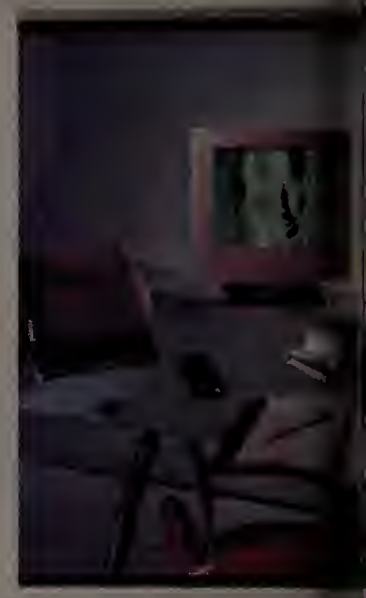

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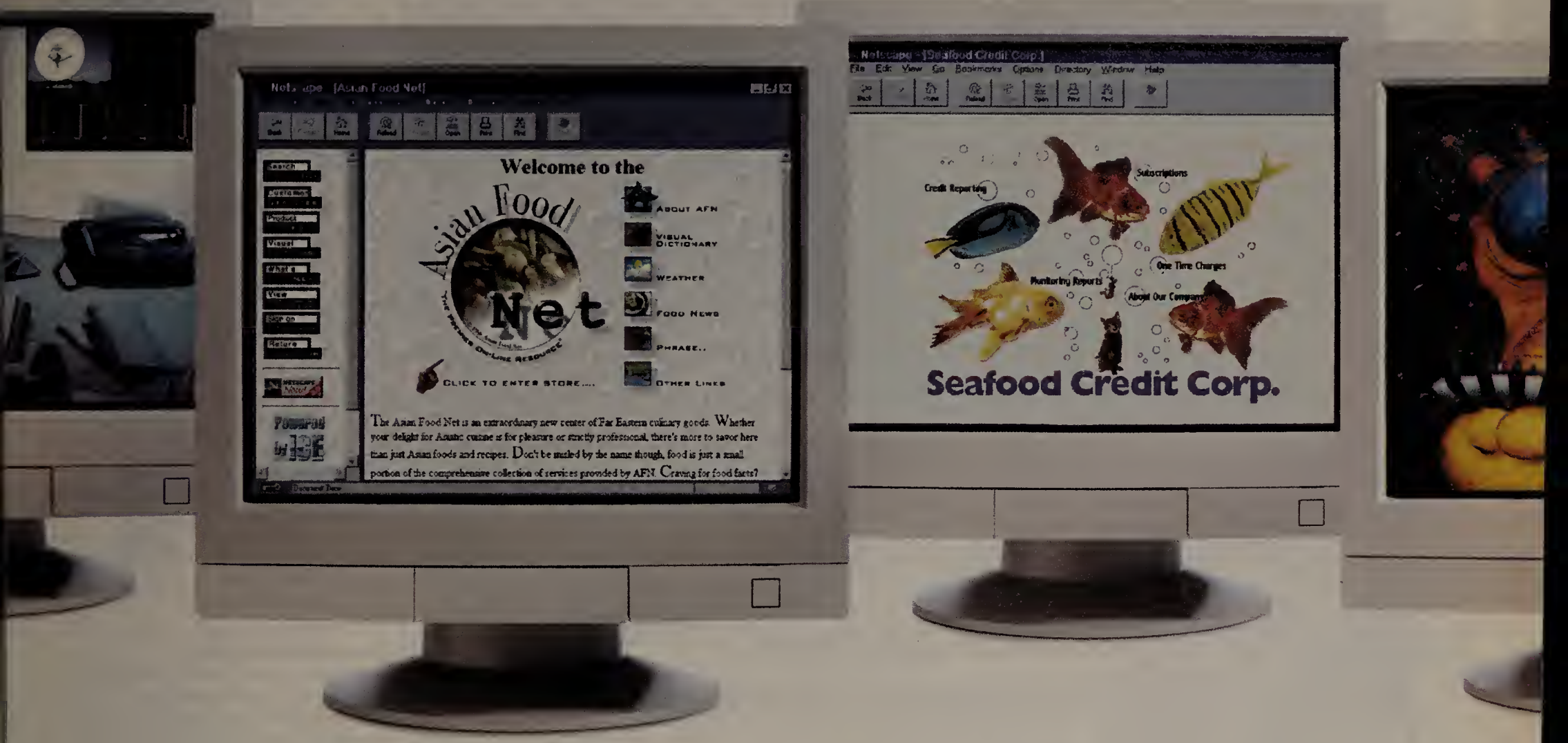

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Few gains made against hackers

By Gary H. Anthes
ARLINGTON, VA.

In recent tests on 30,000 of its computers, the Pentagon discovered that 65% could be hacked in to. Moreover, 96% of the time, administrators aren't aware of the penetrations.

"We are getting at least a thousand hits every 24 hours," said Sarah League, deputy commander at the Pentagon's Center for Information Security. "Within minutes of putting up an Internet firewall at one facility, we were getting pinged by intruders."

The Pentagon has begun a $750 million, five-year program to improve the security of its computer systems, League told attendees at a conference here on information warfare.

Stephen R. Katz, chief information security officer at Citibank NA in New York, blamed clueless users and careless vendors for successful computer attacks. "Products either lack security or are delivered with security functions turned off," he said. Some are even delivered with hidden back doors to allow vendor maintenance personnel easy access, he said.

Russian hackers broke in to Citibank systems last year and made off with some $10 million. The bank has declined to say just how the cyberheist was accomplished.

Katz called on vendors to establish "the functional equivalent of the Underwriters Laboratory" to certify security products.

That is beginning to happen. The National Computer Security Association (NCSA) in Carlisle, Pa., one of the sponsors of the recent InfoWarCon 5 show, has established certification programs for antivirus products and network firewalls.

Not enough testing

NCSA Education Director Michel Kabay said vendors are negligent in releasing products before they are thoroughly tested. "The state of quality assurance today is appalling, and the expectations of end users have fallen," he said.

Kabay said security-conscious users should avoid early releases of products unless they must buy them for functionality reasons. Then, he said, users should apply their own quality assurance measures, such as stress testing.

Katz said hacking has entered a dangerous third phase. In the first phase, hackers were driven mostly by curiosity. In the second, profit became a motive. Now, Katz said, competitors are out to "interrupt your services, compromise data and create confusion."

Indeed, the growing threat from rogue states, organized crime and info-terrorists worries many information warfare specialists. "We are seeing a blurring of threats," said Michael Nelson, a White House special assistant for information technology. "It's hard to distinguish military threats from police matters."

Nelson and other government officials hailed the recent establishment of the President's Commission on Critical Infrastructure Protection. Within a year, the commission is to assess vulnerabilities and threats and recommend policies to protect the nation's computers and networks against attack [CW, July 22].

Unlawful entry

Source: Computer Security Institute, San Francisco

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Unix vendors reach for NT coattails

By Jaikumar Vijayan

Traditional Unix vendors are increasingly leveraging years of data center experience to cash in on growing corporate interest in Microsoft Corp.'s Windows NT.

That's good news for corporations that need that kind of Unix-like reliability and availability to deploy critical applications on Windows NT.

NCR Corp., for instance, recently announced three-way, high-availability clustering software for Windows NT servers. It allows up to three NCR WorldMark servers to be tied together, with each providing backup for the other in the event of an application or system failure.

"What the folks at NCR have done is to take out of the loop the time and the huge expense it would have otherwise taken organizations" to implement those features in Windows NT, said James Hurley, an analyst at Aberdeen Group, Inc. in Boston.

The Dayton, Ohio, company also released six software recovery kits that let corporations back up and quickly restore database and other large applications in case of server failure. The products are based on technologies that NCR has used for years in the Unix space.

"A lot of the applications we are writing on Windows NT are business-critical, and, basically, we need the highest reliability and availability there is," said Bob Romero, project manager of enterprise servers at United States Fidelity & Guaranty Co. (USF&G) in Baltimore. USF&G runs claims processing and other core applications on Windows NT servers.

NCR's announcement highlights a trend among midrange vendors similarly seeking to raise the NT performance bar. Among the actions taken by firms are the following:

- In the past few months, Digital Equipment Corp., Data General Corp., Tandem Computers, Inc. and Hewlett-Packard Co. have announced high-availability clustering software for Windows NT.
- NCR and Corollary, Inc. recently announced hardware technology that allows four-processor symmetrical multiprocessing boxes to be upgraded to eight-processor systems. Such servers are supposed to provide higher levels of performance and inexpensive hardware scalability for NT.
- The same vendors provide hardware and software hooks for tying Windows NT servers more tightly into the enterprise. That includes better systems and cross-platform application management capabilities.

But advances such as those are just beginning to address fundamental questions relating to the viability of NT as an enterprise-class operating system of the future, analysts caution.

In the past, skeptics have pointed to the limited scalability, limited transaction processing capabilities and untested nature of the operating system as major factors working against it in the data center.

"NT is still in its infancy, but some of the things that are being done with NT are very promising," said Sean Gilbert, MIS manager at Cardservice International in Agoura Hills, Calif. The company runs a computer telephony application under Windows NT and eventually plans to port database applications to the operating system.

Digital announces some NT products. See page 42.

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Suite licenses confound users

By Lisa Picarille

Users wading through complex licensing agreements for their suites of office productivity applications are finding the going tough.

A common complaint is that a user would "need to be a lawyer" to sort out licensing requirements — especially when it comes to suites.

"It's a thicket of terms and conditions and negotiated deals that is intended to be confusing," said Jeff Tarter, editor of "Softletter," an industry newsletter in Watertown, Mass. "The more confusing the agreements are, the less likely users will really know what they are actually paying for — which means that Microsoft can make more money."

For example, some users say obtuse licensing agreements often force them to pay a suite vendor more for support to get concurrent, or multiuser, licenses. It is often unclear if the agreements apply to overall use of the suite or to the individual applications that compose the suite. Adding to the complexity is the fact that the top three suite vendors — Microsoft Corp., Corel Corp. and Lotus Development Corp. — use different terms for volume licensing, despite users' pleas to standardize.

Microsoft singled out

The strongest criticism has been directed at Microsoft. One user said the complexity and prohibitive cost of signing a licensing agreement with Microsoft was one of the reasons his company chose to stick with Corel WordPerfect Suite.

"The licensing issue is a big one. We thought about switching to Microsoft Office when we decided to make the change to Windows 95," said Gary Wilkerson, supervisor of end-user services at Kaiser Foundation Health Plan, Inc. in Atlanta.

Wilkerson oversees 1,500 users, including about 700 who use products from WordPerfect Suite. He has a license for 250 to 300 concurrent users. "The cost of going from single-user licensing [with Corel products] to concurrent user licensing [with Microsoft products] for us would be about $230,000. That is just way too steep."

Another IS manager, whose company is a longtime Microsoft Office user, agreed to speak on the condition of anonymity. "It's like leasing a car. The terms are so confusing that you can't figure out what you are paying for. And the only time Microsoft wants to make things understandable is when you are in violation of the rules. That translates into more money for Microsoft."

"We have heard this negative feedback ... [and] we agree that the licensing is more complex than we would like it to be, and we are working hard — especially for Office 97 — to simplify it," said Michael Graff, group product manager for Microsoft Office. He declined to discuss details about Microsoft's new licensing plans, but he said the new program will be announced when Office 97 ships this fall.

Tarter said it is easy to document the decline in the price of software sold at retail. But he said it is much harder to chronicle how much the cost of signing corporate licensing agreements has gone up because of the complexity and scope of licensing agreements.

Users are sour on suites licensing because:

- Licenses are too complex
- It isn't easy to add more users
- There is confusion about concurrent licensing
- Users often have to pay increased support costs for concurrent licensing

Office 97 will help users share information. See page 49.

N. WARREN WINTER

Zurich Insurance's Douglas Mackie *says Ramac 3's additional disk capacity will give him room to grow his data storage operation*

IBM aims S/390s at Unix

By Michael Goldberg

In announcing a third generation of air-cooled mainframes, IBM officials last week pledged that the new System/390s would compete against Unix vendors who have circled big iron users like buzzards overhead.

Some observers are skeptical that IBM will win converts to the mainframe. But the pair of new systems to be available next month — the S/390 G3 Server and the S/390 Multiprise 2000 — sound sweet to the faithful.

The G3 server indicates everything is moving to "smaller, faster cheaper. That's a delightful set of trends," said Gerard Higgins, assistant vice president of data center and network resources at Nynex Corp. in New York.

The newer models will allow Nynex to save enough floor space to close some data center buildings in New England, Higgins said. "That saves tons of money and simplifies our operations," he said.

At 45 MIPS for one processor, the G3 machines boast double the performance of previous air-cooled System/390s that use CMOS technology. The Multiprise, designed for small and mid-size firms, comes in models that start at 3.5 MIPS.

As expected, IBM also announced System/390 software, including Release 2 of OS/390, and accompanying storage subsystems, including Ramac 3, which doubles the capacity in one disk array to 180G bytes [CW, Sept. 2].

More bang for the buck

Ramac 3 also will offer a price break to users such as Zurich Insurance Group in Schaumberg, Ill., said Douglas Mackie, vice president of megacenter operations. And with more capacity on the disk arrays, "I'll get back two-thirds of the [direct-access storage device] floor, so I can use the same space and grow larger" in data storage, Mackie said.

IBM would like the Multiprise to compete against Unix server vendors, said John Young, an analyst at The Clipper Group, Inc. in Wellesley, Mass. But Young said IBM mainframe sales staff have little experience dealing with Unix shops. IBM's success could depend on third-party resellers and systems integrators, he said.

IBM's appeal to a broader audience gets a boost from the system's Unix compatibility, said David Floyer, an analyst at International Data Corp. in Framingham, Mass. But one thing lacking in IBM's announcement is the finished porting of SAP AG's popular R/3 application to System/390. IBM needs to get software such as that on the mainframe to compete, he said.

Besides System/390 hardware and Ramac 3, IBM announced the following:

- A "snapshot" feature for Ramac Virtual Arrays — formerly Storage Technology Corp. Iceberg — that creates a second copy of the information that details where data is located in a disk array.
- World Wide Web gateways for CICS, MQSeries, DB2 and IMS applications, due in December.
- Ramac Data Migration Service software to move data from older 3990-compatible storage systems to newer models, available by year's end.
- A Magstar tape drive compatible with StorageTek tape silos.

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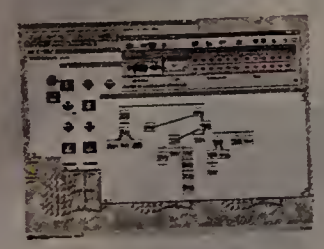

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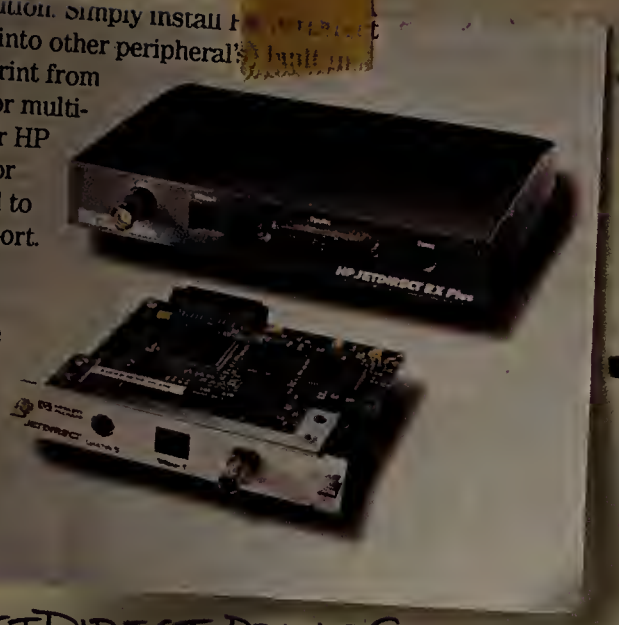

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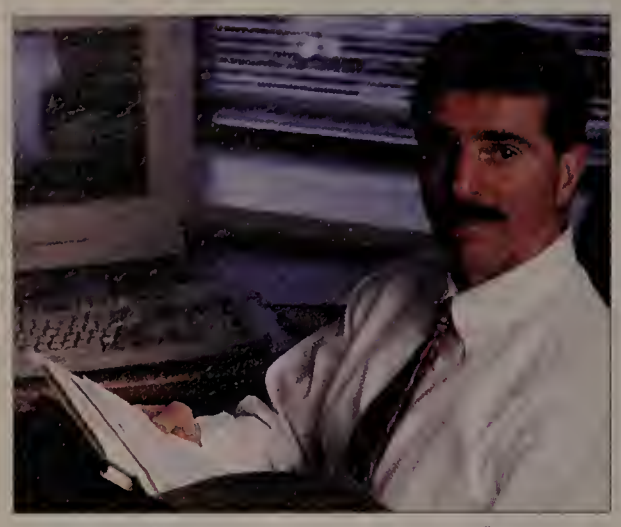

Novell's Joe Marengi *says customers come first*

Marengi: It's time to win

Two weeks ago, Joe Marengi, a 43-year-old Lynn, Mass., native, replaced Robert Frankenberg as president of Novell, Inc. In an exclusive Computerworld *interview with senior editor Laura DiDio, Marengi spoke about Novell's marketing woes and detailed plans for repositioning the company.*

CW: Who's running the show at Novell now that the jobs of president, CEO and chairman have been split?
Marengi: I'm running day-to-day operations. We want to bring in a CEO who's an industry luminary. [Editor's note: Chairman John Young is interim CEO.]

CW: Will you throw your hat in the ring for CEO?
Marengi: Definitely. But it's the board's decision. My job is to respond to Novell's customers, motivate employees and get Novell moving in the right direction.

CW: One of the biggest criticisms regarding Novell's strategy over the past two years is that it was too defensive with respect to Microsoft.
Marengi: Bill Gates and Microsoft aren't my or Novell's archrival. Novell competes with many vendors. Truthfully, our biggest rival in the last few years has been ourselves. We failed to clearly articulate a strategy. That will change now.

We're going to be more aggressive — I'm different from Bob [Frankenberg] in a lot of ways. As far as I'm concerned, winning is the only viable option in life. Novell has been way too passive.

CW: What immediate changes will be made?
Marengi: You're going to see a new, unified Novell — the company with an attitude. We have tremendous technology, but we've never told people why they should use NetWare, GroupWise, etc. Now we have to deliver bulletproof software and open up the technology to multiple platforms.

CW: When will Tabasco, the code name for NDS running on Windows NT Server, ship?
Marengi: Right now, it's slated for first-quarter delivery. It's the most cogent strategy we have for NDS.

CW: Is Novell for sale?
Marengi: No.

Name your price

IS talent plays hardball with software firms

By Julia King

Forget simple raises and signing bonuses. White-hot demand for top technical talent is forcing software companies to become much more creative with compensation.

Today's packages are also likely to include flexible working hours, equipment for a home office, performance-based bonuses and increased stock options, just to name a few of the increasingly popular perks, recruiters said.

"People with webmaster talents or individuals developing in Java or Hot Java can pretty much name their price and assignment," said Brian Hoffman, a partner at Winter, Wyman & Co., a recruiting firm in Waltham, Mass.

"A talented player really does have the ability to make some rather strident demands. Creative freedom and flexibility are the big demands. Right now, they can have both," he said.

A new survey of 500 software companies by Coopers & Lybrand confirms the skyrocketing demand for information systems talent. In the past year, nearly 70% of software companies expanded, increasing their employee base by an average of 34%.

"That's a very high number when you look at statistics from the rest of corporate America, where raises average between 3% and 5%," said Larry Schumer, managing partner at Coopers & Lybrand's human resources advisory service in Boston.

Signing bonuses of between $5,000 and $10,000 and plenty of stock options are also common.

"Stock options are doubling for key talent. Where you used to give [a recruit] 4,000 options, now you give 8,000," Schumer said.

What top-notch IS talent wants

- ☑ An employer with excellent financial performance
- ☑ Flexible working hours that include telecommuting
- ☑ The latest technology at home and the office
- ☑ Challenging, creative work
- ☑ The promise of even more challenging work ahead
- ☑ Top starting salary, performance bonuses and stock options

The skills demand has given rise to another trend — an in-house human resources executive at a growing number of software companies.

Sapient Corp., a software development company in Cambridge, Mass., has hired a full-time director of hiring and 17 full-time recruiters. Company executives also regularly brief shareholders on the firm's recruitment activities.

"We spend so much time talking to people about how we hire because it is seen as a fundamental source of competitive advantage," said CEO Jerry Greenberg.

Multiple job offers

Most candidates Sapient talks to also have several job offers on the table, Greenberg said.

Marcam Corp. a software applications company in Newton, Mass., also has brought in a full-time vice president of human resources.

"One of the biggest challenges facing high tech is attracting and retaining talent, but traditionally, there has not been a big focus on human resources," said Phil Gaetano, Marcam's new vice president of human resources.

"HR was seen more as an administrative function, but now it's growing into a strategic function," Gaetano said.

PeopleSoft to embed Red Pepper tools

By Julia King

PeopleSoft, Inc.'s acquisition of Red Pepper Software Co. two weeks ago should come as good news to users looking for an all-in-one software system for supply-chain and manufacturing operations.

PeopleSoft, in Pleasanton, Calif., bought Red Pepper in a stock transaction valued at $225 million. The vendor is integrating Red Pepper's planning and scheduling software into its own manufacturing system, which is scheduled for general release with PeopleSoft 6.0 in December.

Planning software

The combined software will let manufacturing planners create and continually revise optimum schedules for receiving materials, producing goods and shipping products — all based on real-time manufacturing information.

It will also give salespeople the ability to promise shipments based on actual production information rather than days-old information that may have changed several times since it was entered into a system. That capability, users said, is critical to providing good customer service.

"Traditional manufacturing systems work in batch mode, and there's quite a delay," said Frank Glauner, vice president of information systems at Corning Costar Corp. The laboratory equipment manufacturer located in Cambridge, Mass., is a beta site for PeopleSoft manufacturing software.

"Now a planner can be replanning in real-time mode," he said.

Under terms of the merger agreement, Red Pepper will operate as an independent business unit of PeopleSoft. As such, it will maintain its own sales and marketing staff.

In a somewhat unusual twist, Red Pepper will remain free to partner with other enterprise software vendors, including SAP AG, Oracle Corp. and Baan Co. — all PeopleSoft rivals.

For now, though, PeopleSoft is the only vendor to have fully embedded the Red Pepper software into its own. That saves users the time and expense of building interfaces between the two systems.

Users also get one view into the entire supply chain, from the time raw materials are ordered to the time finished goods arrive on a customer's loading dock.

How to tell the difference between a real vendor partnership and a paper tiger. See page 49.

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- (b) Netwere
- (c) OS/2
- (d) Unix
- (e) Mac OS
- (f) Windows NT
- (g) Windows
- (h) NeXTstep

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Networking Products ❒ Yes ❒ No

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C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
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22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

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B. 10,000 –19,999	❒	❒
C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
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Editorial

Born-again CIOs

For years, it's been fashionable in management circles to vilify CIOs as clueless buffoons — Buster Keaton clones wandering around in a daze, waiting for the next building to fall on them.

So some people will be surprised this week at the results of our research that shows that "CIO" doesn't mean "Career Is Over" anymore (see page 88). In fact, CIOs actually have some of the best track records for job longevity of all top corporate officers — an average of 6.5 years.

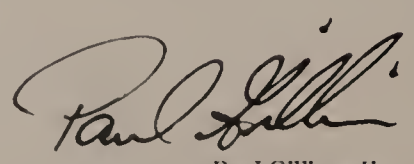
Ironically, it was exactly 6.5 years ago that an issue of *BusinessWeek* carried the first press reference to the "Career Is Over" label. My theory is that the joke was obsolete even before it started.

Today's CIOs are survivors, quite a different breed from the transitional executives of the late 1980s. Consider the tumult that characterized the IS profession at that time. We were mired in recession, restructurings were dismantling America's biggest corporations, client/server computing threatened the established mainframe order, and Windows was about to change the face of desktop computing. IS outsourcing megadeals were being signed every few weeks, PCs were nearing the saturation point in corporate America, and IBM was cruisin' for a bruisin'.

Many of the changes that came down around that time threatened the established order that had ruled corporate IS for 30 years. IS made the transition from control freak to coach, and those CIOs who didn't get with the program quickly got with the outplacement director. But in a Darwinian twist, many of those who survived did so because they adapted to change. And adaptation has been perhaps the most critical survival skill in IS in the years since.

The paradox of the CIO position for some time has been that the job, for all intents and purposes, can't be done. No one person can manage the information resources of a large organization in which two-thirds of the people work principally with information. We have resigned ourselves to a certain degree of chaos and redundancy, because, well, it's worth the trouble.

It's time to put the Career Is Over joke in the closet. Today's CIOs are more flexible, approachable and business-focused than their predecessors. Let's give them a break.



Paul Gillin, *editor*
Internet: *paul_gillin@cw.com*
www.ultranet.com/~pgillin

Letters to the editor

Microsoft: Focus on Internet, not Cairo

The emerging uncertainty regarding Microsoft's NT/Cairo operating system ["Cairo detoured," CW, Aug. 5] stimulated my thinking.

Do we, the marketplace, need competition in the exploding Internet arena among providers of browsers, development tools, security and management software? You bet we do. We also need the competitors, such as Netscape and Microsoft, to genuinely cooperate in rapidly defining and embracing needed standards for Internet software.

Do we really need another proprietary operating system, such as NT? We already have many open Unix operating systems that are time-tested, rock-solid and rich in functionality. IBM's AIX, HP's HP-UX, SCO's Unix, Sun's Solaris and others cover requirements from a uniprocessor Intel PC to multiprocessor mainframe-class enterprise servers.

These Unix operating systems are cost-effective and remarkably compatible. They are becoming ever easier to use with [graphical user interface]-based tools and are available now.

I suggest that the marketplace would be better served by having the large, but finite, resources and management attention of Microsoft focused squarely on Internet standards and products and not diluted by NT/Cairo. Does Microsoft have the courage to publicly make a realistic commitment, one way or the other?

Bob Huth
Technical marketing manager
PMC Data Services
Fort Mitchell, Ky.

Contrasting OS/2 coverage

As one of the individuals who tested the OS/2 Merlin beta, I found your product review of Merlin to be fair and accurate ["Merlin delivers," CW, July 29].

I especially found it comforting that I wasn't the only one who had trouble with the bug-reporting software.

Though somewhat brief, the article clearly shows that *Computerworld* isn't single-mindedly bent on eliminating OS/2.

In stark contrast, Forrest Canon's article on the differences between browsers was anything but "In Depth" ["Browsing the browsers," CW, July 29].

While his article draws attention to problems with browser incompatibilities, it doesn't begin to scratch the surface of the issue.

The article was oversimplified, and the fact that WebExplorer, the only native OS/2 browser, was excluded from the article did not escape my attention.

I suspect that the OS/2 community would be much more forgiving if articles such as your product review are chosen in the place of browsing articles that would be better off if they were browsed over.

Matthew Raymond
Port Orange, Fla.

Don't count on an 'open' OLE

I am taking your story, "Eyes on the enter-prize," [CW, Aug. 5] with a pinch of salt. Microsoft has never really surrendered the rights to anything. It has been a company that utilizes technologies from other companies and then settles out of court when things get sticky.

There are some who claim that IBM owns the patent to OLE, which Microsoft now calls ActiveX. This appears to imply that Microsoft does not have the legal standing to submit OLE to a standards organization because someone else owns it.

The word "open," when used in context with Microsoft, means that it will run on more than one version of Windows in a somewhat consistent fashion. Third parties are expected to provide support for the technology on other platforms.

If Microsoft cannot implement a particular technology consistently on its own operating systems, how can third parties implement these technologies consistently on other operating systems?

I, for one, am not holding my breath while waiting for this to happen.

Satish Rajan
Arlington, Va.

More letters, *page 38*

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Michael Cohn

Why smart cards don't make any cents

Digital cash won't catch on. How do you give the kids milk money or leave a tip?

"Leave home without it." That seems to be the credo these days. Credit cards are out. Cash is obsolete. Instead, there are smart cards — encoded bank cards that work like electronic money.

Is this another triumph of technology? Does it spell the demise of dollars and cents? I doubt it. Smart cards *aren't* smart. I say they won't work. Then again, I once predicted credit cards would never make it; later, my wife rejuvenated the entire industry one Saturday at the mall.

My advice: Stay off the smart-card bandwagon. Instead, ask yourself one basic question: When it comes to money, do you really trust computers? They aren't perfect. They make mistakes. They foul up phone bills. At the supermarket, they scan squash as two-for-85-cents creamed corn. And it isn't just nickels and dimes; we could be talking decimal points. What if your smart card sucked out $69,000 for a frozen burrito? Would anyone notice? Probably not; most people in the supermarket checkout are preoccupied with trying to slip in coupons for Fig Newtons they didn't buy.

Who's to know?

There's a healthy anonymity to cash. It trades hands, no one knows, and everyone's happy. With smart cards, Uncle Sam can track everything. He'll know how much you spent at Wal-Mart. He'll know if you got $75 for your gas grill at a garage sale. And he'll know you dropped $30 at happy hour — and so might your boss, especially if you were supposed to be picking up a client at the airport at the time.

Worse, if most folks are relatively inept with money, then smart cards will be downright disastrous.

How can you tell when you're about to go broke? Will it have a little odometer? Because without one, I guarantee it isn't until *after* the prime rib, baked potato and key lime pie that I realize I have only 85 cents left in electronic cash — not even enough to cover valet parking.

And speaking of valet parking, how do you tip someone? Or borrow a five? Or give a guy a dollar for washing your windshield? Here's where smart cards get really ugly. How will they handle simple, day-to-day transactions? Can you still give your kid 35 cents for milk money? What about allowance? I've tried like heck to teach my son the value of a dollar. Soon, thanks to technology, he won't even know what one looks like.

I'm not trying to be a stick-in-the-mud. But plenty of folks are going to line up against smart cards, including most of corporate America. Businesses are frail enough as it is. They depend on the quarters folks lose in a pay phone. They survive by vend-o-charging 50 cents for Ruffles and then having the chips stay stuck in the machine. And it's money that determines every tough call a chief financial officer has to make: "Heads we downsize; tails we go for danish."

I've got nothing against high tech. But when it comes to money, trash electronic cash! Snuff out smart cards. Give me greenbacks from the good old U.S. of A., legal tender that proudly displays "In God we trust" and "E pluribus unum." Although, soon enough, even *that* and a quarter won't get you a cup of coffee.

Cohn is a computer consultant in Atlanta, where just about everyone takes his smart cards now — including his kids when he isn't looking.

Kathryn Korostoff

Desktop video is coming. Really!

This time, PC videoconferencing is finally cheap enough for corporate America.

People who say desktop videoconferencing is a serious business tool usually get the same reception as people who say they were abducted by aliens: polite silence at best, public humiliation at worst. But I'll be brave and say it: Desktop video is coming and in a very big way.

If you've given up waiting for desktop video, it's time to brush off your telescope and look again. The desktop video planets are finally aligned.

Yes, I know you're skeptical. I was, too. But in a recent survey of 270 U.S. businesses, my firm found that 19% already have deployed desktop videoconferencing. That's a significant minority — especially given that the surveyed businesses were from a cross-section of industries, not just government test labs or well-endowed universities.

Set usage policies on desktop video to keep it from disrupting network traffic.

Perhaps more impressive, another 47% reported that their organizations plan to deploy desktop video by 1999. The scope of deployment will vary; not all will provide video on most workers' desktops. But even when video is initially limited to the select few, it will spread quickly. Just as the use of electronic mail grew quickly from a novelty to a norm, so too will videoconferencing.

For some, that 47% may sound too high. Is this just wishful thinking on the part of IS executives eager to push their organizations into the 21st century? No, I think it's fairly accurate. A lot of pieces are finally in place that make desktop video far more feasible — and cost-effective — than it was in the past.

First, products are available that can add videoconferencing to a desktop for less than $1,500 — some for much less. Among vendors with desktop video packages in that price range are Creative Labs and Intel. And desktop video cameras have come way down in price; Toshiba has a model that lists for $259.

In bundles

Second, leading PC manufacturers are starting to bundle desktop video with their PCs and servers. Compaq, for example, plans to incorporate Intel's Video Phone in its PCs to provide video over analog telephone lines. Such bundling will lead to a grassroots adoption of video, which will further drive corporate use. Third, video may ride the Internet/intranet wave. Several companies — Intel is the most aggressive — plan to support video over the Internet Protocol. So next year, we'll start seeing commercial demonstrations of video over the Internet. That, too, will fuel the grassroots video movement.

The fourth major planet to align itself is the LAN infrastructure. Organizations are upgrading their networks, which just happens to make them more video-capable. Many organizations are deploying switched LANs, resulting in 10M bit/sec. segments either shared by very few users or, in some cases, having just one user.

Although those organizations may not be deploying switched LANs specifically to support video, they certainly will take advantage of the additional bandwidth by using it for video. In fact, the same survey found that 77% of organizations deploying switched Ethernet are also deploying desktop video.

As end users start to get PCs with video bundles, IS executives will have to prepare their organizations for a desktop video sneak attack. It will increase RAM requirements and LAN traffic loads and will tax wide-area networks. And yet the video traffic will be hard to monitor and manage because it will look just like IP or regular analog traffic.

But there are two ways to ease the pain. Set policies and standards for desktop video use to keep it from disrupting LAN and WAN traffic. And prepare help desk staff for a deluge of calls.

IS managers might as well embrace desktop video because it will be impossible to forestall.

Korostoff is president of Sage Research, Inc., a market research firm in Natick, Mass. Her Internet address is kathryn@sageresearch.com.

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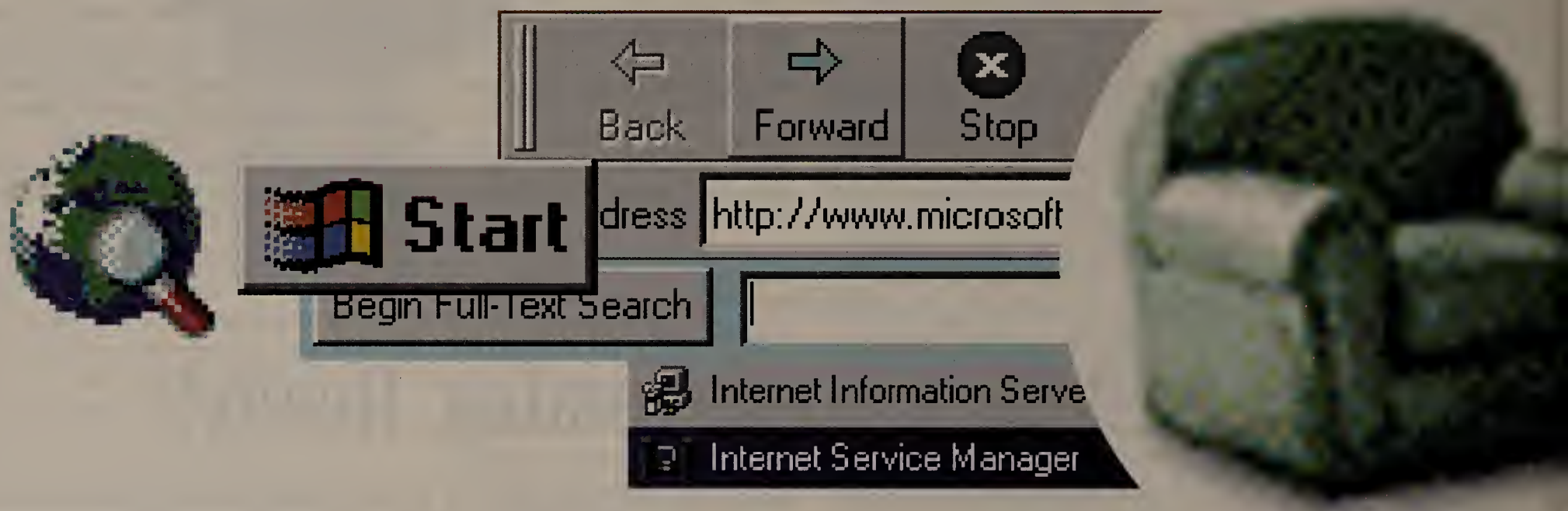

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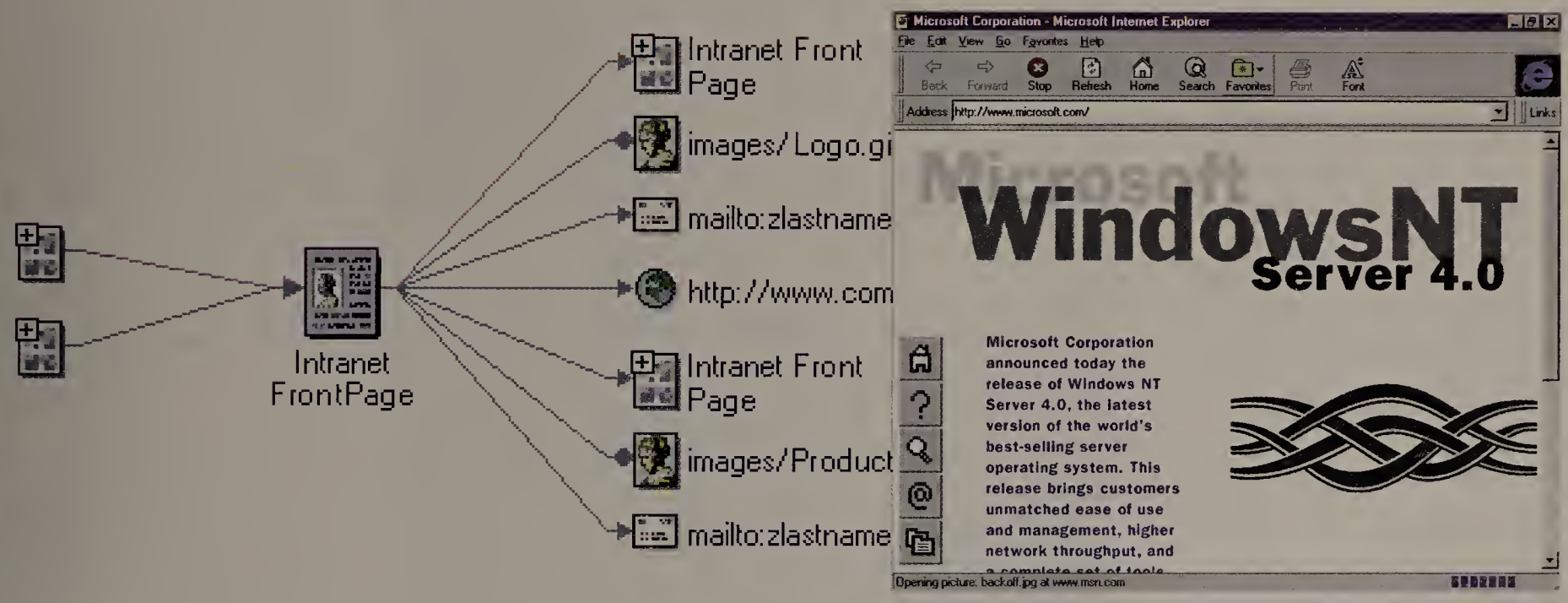

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Letters to the editor

Readers team up, debunk object myth

I gather your publication is still promulgating the myth that object databases are not ready for prime time ["Object databases lag," CW, Aug. 19].

Perhaps if you had really done your homework, you would have discovered what is really going on in the market. I am the principal of an object-oriented contract engineering and consulting company. I observe that all the new, interesting and different applications being implemented are using object database systems, not relational ones.

I suggest you look at what is going on with the World Wide Web, finance and telecommunications companies.

The fact that these systems are proving so good must be one of the better-kept secrets around. They are providing significant competitive advantage to the companies that deploy them.

It may also have escaped your notice, but two object database companies, Versant and Object Design, recently went public on the strength of improving revenues.

I fail to understand your motivation in dissuading a large body of corporate computer users from using better, cheaper and faster technology that could significantly enhance their businesses.

Adrian Blakey
Object Focus
Cupertino, Calif.

I was stunned to read that *Computerworld* continues to promote a myth: that object databases are unstable and don't scale as well as relational databases.

This is just inaccurate and ignores the facts.

I have been covering the object database industry as an analyst associated with International Data Corp. for the past four years. During this time I have continued to find a substantial and growing installed base of deployed 24 by 7 applications.

In speaking with ODBMS users and visiting with several sites, my findings show that object databases scale very well. Many of the databases are larger than 100G bytes; several are between 300G and 500G bytes.

> "Object databases are ready for prime time."
>
> —*Joshua Duhl, Stillpoint Consulting*

Object databases are ready for prime time and have been for several years.

They are more advanced than relational databases in several areas, including replication, distributed processing and data management, schema evolution, versioning and, yes, handling user-defined and multimedia data types. Yet you make no mention of these capabilities.

Many companies with mission-critical applications are building them on object databases, simply because relational databases cannot provide the performance, scalability or features required by these new applications.

Joshua Duhl
Stillpoint Consulting
Cambridge, Mass.

I am disappointed to see that *Computerworld* is continuing to spread the myth that object databases aren't stable and don't scale as well as relational databases.

I have been writing a series of management briefings on companies that have successfully deployed applications using object databases. In the 23 companies I have studied so far, five use them in 24 by 7 applications. The average database size for the group studied has been between 1G and 99G bytes, with nine expected to be in the 100G- to 499G-byte range within five years.

The fact is that object databases are stable. Companies have mission-critical applications in place using them.

And if your application requires complex data, object databases scale better than relational databases and will provide better performance.

Douglas K. Barry
Barry & Associates, Inc.
Burnsville, Minn.

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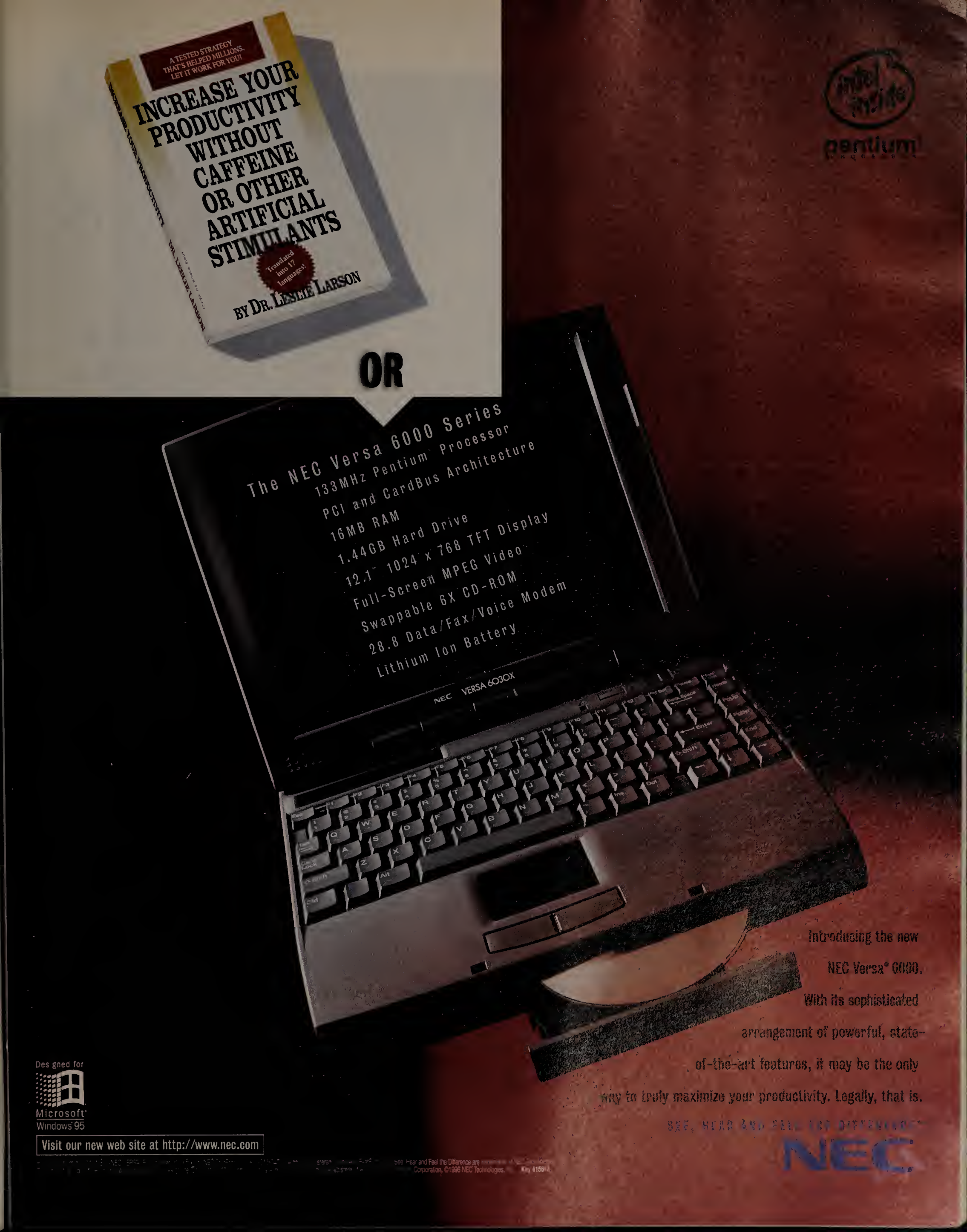
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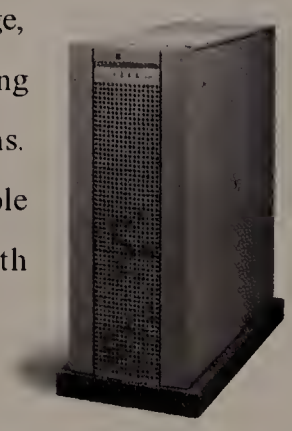

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IS managers take a closer look at network computers, 42

Servers & PCs

Standards scuffle

Users will win storage device interface row

By Jaikumar Vijayan

An ongoing struggle between two vendor groups could soon result in much improved and lower-priced interfaces to storage devices.

A storage device interface lets users connect disk drives, CD-ROM drives, tape drives, optical devices and printers to PCs, servers and larger computers. The new technologies will let users connect more of such devices over longer distances and at much higher speeds than current technology allows.

On one side of the standards battle are proponents of an IBM-championed interface technology, Serial Storage Architecture (SSA). On the other side are industry heavies, including Hewlett-Packard Co., Seagate Technology, Inc. and Quantum Corp. They are pushing Fibre Channel Arbitrated Loop (FC-AL) technology (see chart).

The current SCSI technology transfers data at speeds between 10M byte/sec. and 40M byte/sec., while SSA supports 80M-byte transfers and FC-AL supports 200M-byte transfers. The substantially higher bandwidth of the serial technologies allows data to be accessed and transferred from storage devices over the network more than twice as fast as SCSI devices can support.

Vendors have already started to announce products that use both interfaces, but analysts don't expect either technology to hit mass volume for another year at least.

Regardless of which side gains wider industry acceptance, customers will win, analysts said.

"There's a very positive upshot in all of this for the end user," said Michael Peterson, president of Strategic Research Corp in Santa Barbara, Calif.

"The entire industry is focusing on improving the performance characteristics of device interfaces," and customers will benefit from things such as higher bandwidth and greater connectivity over the network, he said.

Vendors' efforts to move to these new serial technologies come amid signs that SCSI technology may be stretched to the limit in today's data-intensive application environments, analysts said.

Systems vendors are looking at these technologies because they will "allow them to drive a lot more bandwidth," said John Webster, an analyst at The Yankee Group in Boston.

The difference in speed is crucial in several multimedia applications, digital video and World Wide Web-based applications that involve the rapid transfer of lots of data.

More to store

How storage device interface technologies stack up

	Data rates (total link bandwidth)	Devices supported
SCSI	10M to 40M byte/sec.	15
SSA	80M byte/sec.	126
FC-AL	200M byte/sec.	126

SCSI limits

SCSI may also soon start hitting the wall in other areas. For instance, because of their relatively low bandwidth, SCSI interfaces can support only about 15 devices. Both FC-AL and SSA allow up to 126 devices. Similarly, in most instances, SCSI requires that each of the devices be no greater than 3 meters apart. SSA and FC-AL each allows distances in excess of 20 meters.

A report last year by International Data Corp. in Framingham, Mass., also pointed out that the cost and cumbersome nature of SCSI cabling and device adapters could become increasingly burdensome in large configurations.

Storage, *page 44*

Food company takes fresh look at its data

By Michael Goldberg
WHEELING, ILL.

Three years ago, the managers at Orval Kent Food Co. felt as if they were computer-systems stepchildren to a parent company that treated routine information requests with only slight interest.

But now Orval Kent, a maker of refrigerated foods, views fresher data with new eyes, said Dennis Lynch, the company's director of MIS.

Sharing trends

The $150 million company is starting to build a small data warehouse that will let it share sales trends with customers such as supermarket chains to show them how they can sell more crab and macaroni salads. In the future, managers plan to examine the cost of ingredients that go into its potato salad and other products, said Dan Wartalski, sales administration director.

The catalyst to Orval Kent's gradual but dramatic change in information systems fortunes came from an event that some data center managers might dread: being disowned by the parent corporation. The former Pet, Inc. in St. Louis (since acquired by The Pillsbury Co.) told Orval Kent executives they had 18 months after the separation in April 1994 to get off Pet's mainframe systems before incurring computer time charges.

"We had to compress what was normally a three-year project into a one-year cycle" while minimizing miscues, said Lynch, who oversees a staff of six. Orval Kent, now privately held, employs about 1,000 people in the U.S. and Mexico.

In essence, Orval Kent converted the need for a new system into a chance to make its sales and manufacturing managers more aggressive in their use of information. "This definitely was an opportunity. A lot of times [under Pet] we were like orphans. We didn't get a lot of support. [This IS project] has empowered us a lot more," Wartalski said.

MICHAEL L. ABRAMSON

Orval Kent's Dennis Lynch *says the choice of multipackage software from System Software Associates was key to the company's new system*

Choosing platforms

After a couple of months of working with Andersen Consulting, Orval Kent picked System Software Associates' business planning and control packages for the AS/400 as its prime software and hardware platforms. The software was the key decision, Lynch said, because it had packages for sales, order processing, manufacturing and finance.

The company has limited staff and needs to spend frugally and avoid disrupting business operations, but the project continues to roll out in phases.

At the moment, only headquarters staff can study sales information in the growing data warehouse — it has about three years of company history that takes up 6G bytes. Eventually, the company will provide remote laptop access to its field representatives and distributors.

And Lynch said his field sales staff will soon begin to use Silvon Software, Inc.'s SalesTracker package to analyze market data. Company officials envision field representatives being able to go online to understand sales trends more quickly than they could by poring through pages of week-old reports.

In addition, Orval Kent plans to study the effectiveness of its promotions spending with distributors.

SNAPSHOT

Cost of scalability

Average cost per user in manufacturing and insurance companies is at least 1.6 times lower for mainframes than for Unix servers

Type of installation	Type of server	Cost per user per year
Manufacturing	Mainframe	$2,193
	Centralized Unix server	$5,367
Insurance	Mainframe	$3,715
	Centralized Unix server	$6,228

Base: 273 companies that perform transaction processing applications

Source: International Technology Group, Mountain View, Calif.

DEC line courts NT products

Follows trend to bundle options

By Jaikumar Vijayan

There's a new religion called Windows NT at Digital Equipment Corp. these days, and the pews are filling up.

Continuing its efforts to portray itself as the vendor of choice in the crowded Windows NT market, Digital last week announced a range of Intel Corp.-based PCs, mobile computers, workstations and servers, all running the latest version of Microsoft's operating system.

Windows operating system

Across the enterprise

The highlights of the announcement include the availability of Ultra II notebooks prebundled with Windows NT 4.0, Celebris FX Pentium desktop PCs with similar options and the extension of Windows NT 4.0 support to Digital's systems and network management software.

The Celebris FX family features 133-, 166- and 200-MHz Pentium Pros, with prices starting at $1,749, the company said. Celebris GL models include 180- and 200-MHz Pentium Pros and feature integrated Matrox graphics and built-in audio support for Universal Serial Bus. Prices for the GL start at $2,609. Both models are available immediately.

The rollout gives Digital one of the most integrated Windows NT product lines in the industry and highlights a trend among several PC vendors to offer users bundled Windows NT options across all product categories. Such factory-bundled options are supposed to make it easier for users to implement Windows NT across the enterprise.

Yet Digital's announcement is unlikely to translate into dramatic sales for the company, said Joe Ferlazzo, an analyst at Technology Business Research, Inc. in Hampton, N.H.

"Certainly the trend is there, but Windows NT is not at the volume levels yet where it is going to be used across all platforms," he said.

Other highlights include the following:

- Introduction of new power-management and hot-docking capabilities on Ultra II notebooks.
- A new version of ClientWorks, Digital's client management software, with better reporting of asset management information to a company's network administration and software server. Also, a new version of ServerWorks Manager, Digital's management software, including remote paging, management of Windows NT clustered servers and integration with Digital's Desktop Management Interface-based ClientWorks software. Both are available immediately.
- Digital also announced it is readying a new family of high-end Windows NT-based personal workstations. The workstations will be based on the Pentium Pro microprocessor and are expected to be unveiled later this quarter, the company said.

Information from an IDG Wire Service report was included in this story.

IS managers mull network computer

By Bob Francis and Michael Goldberg

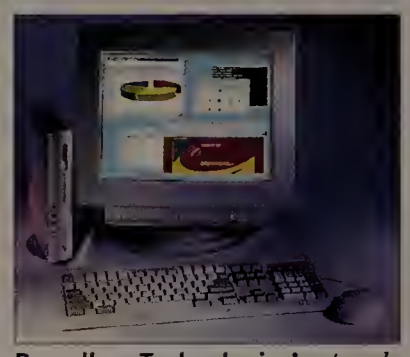
Information systems managers have donned their Darwinian thinking caps to determine if the new animal appearing on desktops — the network computer — is an evolutionary step forward or backward.

Although much talked about, network computer devices are just beginning to hit the market, with IBM recently throwing its hat in to the ring with its Network Station. The devices are attractive to IS managers because they offer the hope of cutting the cost of PC management, with most of the resources for the devices handled centrally, said Steve Auditore, an analyst at Zona Research, Inc. in Redwood City, Calif.

Zona said the five-year cost of ownership of 15 PCs connected to a Windows NT-based server is $217,663; the five-year cost of 15 network computer devices would be $94,368, a 57% savings.

And users seem intrigued by the concept. Dennis Bosma, IS director at Kahler Realty Corp., a hotel management chain in Rochester, Minn., said he plans to evaluate whether Network Station could ease his PC LAN-management headaches. The potential is there, he said.

"With our LAN, we've had 386 PCs, then 486 PCs, then Pentium PCs. You're constantly adding more memory and disk in your PCs to get performance," Bosma said. "I refer to it as the money pit. This [device] should eliminate that."



Boundless Technologies' *network computing device starts at about $700*

Not everyone sees the devices as a cure-all.

There is too much hype in general around the network computer, said Gregory Wester, a research director at The Yankee Group in Boston. Network Station — or any network computer device — won't mean very much until there is enabling software.

These new storage-less desktops need software to deliver capabilities, whether simple spreadsheets or more sophisticated applications, he said.

"This [kind of] box certainly is capable of providing access to the [World Wide] Web. But what we'll need for this genre to work in a corporate environment is a terminal that has the appropriate network" capabilities, Wester said. "At this point, I doubt there are a lot of IS managers that would flock out and buy it — because there's no software for it."

Several firms have announced network computing devices. Among them are the following:

- **HDS Network Systems, Inc.** in King of Prussia, Pa., has been shipping its @workStation since June, with prices starting at $750.
- **Wyse Technology, Inc.** in San Jose, Calif., is shipping its Winterm terminal as an Internet device, with prices starting at $500.
- **Boundless Technologies, Inc.** (formerly SunRiver Data Systems, Inc.) in Austin, Texas, has announced Boundless Network Computer, with prices starting at about $700.
- **JCC USA, Inc.** in Palo Alto, Calif., plans to offer an Internet communication device designed for use with a TV or monitor for about $500.
- **IBM**'s Network Station was designed for connection to OS/2, System/390, AS/400, RS/6000 and Windows NT servers. It is compatible with other Unix servers that support X Window System capabilities. Accompanying server software gives file server and user management functions.

Briefs

HP adds Pentium Pro

Hewlett-Packard Co. in Palo Alto, Calif., has added three Pentium Pro-based servers to its lineup. Two are high-end systems. The first is NetServer LX Pro 6/200, a 200-MHz Pentium Pro system. Pricing starts at $14,130 for a system with 64M bytes of RAM. The second high-end system is the NetServer LXe Pro, a smaller version of the LX Pro. Pricing for the NetServer LXe Pro starts at $10,900 for a system with a 166-MHz Pentium Pro processor and 64M bytes of RAM. The third system is the LH Pro, a midrange Pentium Pro server. It is outfitted with a 200-MHz Pentium Pro processor and 32M bytes of RAM. Pricing for the LH Pro starts at $7,800.

Packard Bell bundles 'net phone software

Packard Bell Electronics, Inc. in Sacramento, Calif., will bundle **VocalTec Ltd.**'s Internet telephone software with each of its new Platinum series of multimedia computers. With the software, Packard Bell Platinum owners will be able to conduct two-way conversations worldwide for the cost of an Internet connection if the user on the other end is using the same software on a PC or Macintosh computer.

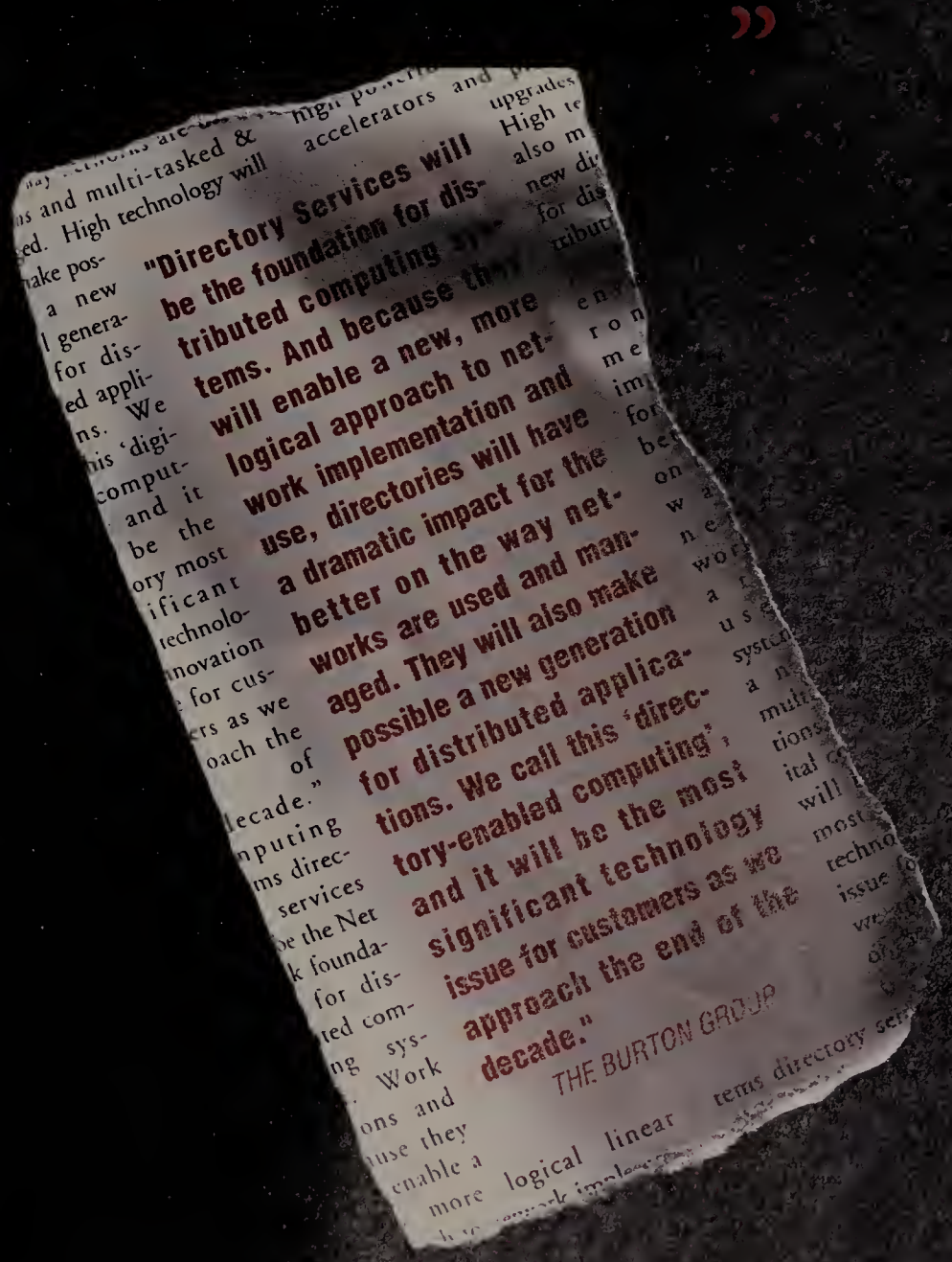
Axil goes graphic

Axil Computer, Inc., a maker of SPARC clones in Santa Clara, Calif., has introduced a graphics workstation/workgroup server duo based on **Sun Microsystems, Inc.**'s 64-bit UltraSPARC chip and the Solaris 2.5.1 operating system. Axil's Ultima1/E+ uniprocessors come with either the 167- or 200-MHz UltraSPARCs and support up to 512M bytes of memory. Prices start at $21,265 for the workstation and $20,025 for the server.

Sun processors bow

Sun Microsystems, Inc. has announced new UltraSPARC processors with expanded cache memories for its Ultra Enterprise line of Unix servers. Sun said the bigger caches increase CPU performance by up to 26% on the servers, which were introduced in April. Customers who already bought systems can upgrade to the new processors for $11,000.

Okay,
So This Is The Future
Of The Enterprise.



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Single-chip alliance's appeal

By Sari Kalin

Semiconductor companies hope a new industry alliance will make it easier for them to pack more functions onto a single chip.

Thirty-six semiconductor, systems and design automation software companies have signed on to the system-on-a-chip alliance. Members include Cadence Design Systems, Inc., Mentor Graphics Corp., Synopsis, Inc., Cirrus Logic, Inc., VLSI Technology, Inc., Sun Microsystems, Inc., Silicon Graphics, Inc., Sony Corp. and Toshiba Corp.

One goal of the alliance is to develop standards that will make it easier for members to exchange "soft cores" — high-level logic-building blocks, such as an MPEG video-stream decoder or a microprocessor — that can be linked on a single chip, according to a member of the alliance.

The idea is to "allow companies to mix and match intellectual property from different sources and then integrate it onto a chip," said a spokesman for Cadence, a design automation company in San Jose, Calif.

Packing more functions onto one chip is important for products such as cellular telephones, video games and other consumer electronics that need small components, the spokesman said.

There is no easy way to integrate cores designed by different manufacturers onto a single chip, said Dean McCarron, a principal at Mercury Research, Inc. in Scottsdale, Ariz.

For example, if designers want to use a graphics controller from one vendor and a microprocessor from another vendor, they have to use two chips, McCarron said.

Smoother integration

"Each vendor has different areas of specialization," McCarron said. Developing a standard way to exchange cores "allows the person who is doing the design to pick the best technology for each particular part of the problem" and still integrate the functions on one chip.

The alliance will also look at licensing issues, something that another analyst said is key to its success. Now, if two different functions are on separate chips, both manufacturers produce chips and get revenue. But "we're now moving to the direction where we're going to have one chip," said Jim Feldhan, president of Semico Research Corp. in Phoenix.

"Somehow these companies are going to have to decide who's going to make the chip and how the revenue is going to be split between the two companies," Feldhan said.

Kalin writes for the IDG News Service in Boston.

We thought about getting President Clinton to speak at our D.C. conference.

But we figured you'd rather hear Tim Berners-Lee.

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Storage

CONTINUED FROM PAGE 41

Further, as media transfer rates increase, SCSI buses could be saturated quickly, the report said.

Still, SCSI won't go away completely any time soon, analysts said. For most PC and file server applications, current interface technology is adequate.

And advances in SCSI interfaces — such as Fast/Wide SCSI — are beginning to address some of the more immediate bandwidth and connectivity issues, analysts said.

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Okay, So Novell® Found A Few Analysts Who Share Its Vision.

"If you compare Windows NT Server to NetWare 4. then Novell has a significant advantage because of its centralized directory."

Gartner Group's Dave Cappuccio

"NetWare 4's momentum is driven in part by customers' demand for NDS... NDS provides leading directory services for distributed neworks."

Lee Doyle, IDC

"The most complete directory service strategy...is Novell's... Novell is still 12+ months ahead of Microsoft..."

META GROUP

Most notably, NT Server lacks a comprehensive directory service. By contrast NetWare provides most of the capabilities necessary in a large-enterprise network operating system - especially in Novell Directory Services (NDS)."

Gartner Group

But That Doesn't Mean Real World Customers Will.

"Novell is really positioning NDS as a specific Internet or client/server distributed set of products not tied to NetWare."

LEE DOYLE, IDC

New Products

Pinnacle Micro, Inc. has introduced Tahoe 640, a removable optical storage device.

The Irvine, Calif., firm said Tahoe 640 is a 3.5-in., 640M-byte removable optical storage system that weighs less than two pounds and has a 3.3M byte/sec. transfer rate.

Each 3.5-in. optical disc can store up to 640M bytes of data, graphics and files on a single-sided disc.

The system works with major industry standards for data interchangeability.

Tahoe 640 is available in an internal version for $699. The PC/Macintosh external version costs $799. The removable cartridges cost $59 each.

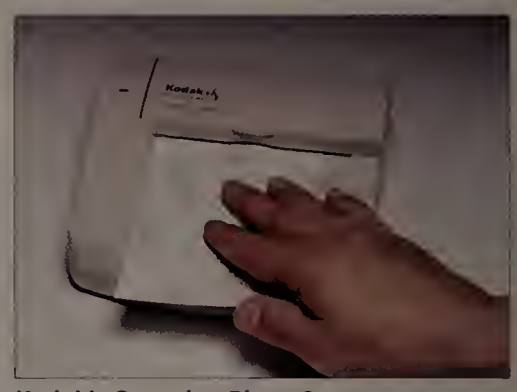
▶ *Pinnacle Micro*
(714) 789-3000
www.pinnaclemicro.com

Eastman Kodak Co. has introduced Kodak Snapshot Photo Scanner 1, a compact color photo print scanner.

According to the Rochester, N.Y., company, the product can scan and display a picture in less than 30 seconds.

The scanner weighs less than two pounds and takes up less desktop space than a mouse pad.

Snapshot Photo Scanner 1 requires an IBM PC or compatible computer running Windows 3.1 or Windows 95 software, 8M bytes or more of RAM and a standard VGA monitor with a 16-bit display card.



Kodak's Snapshot Photo Scanner 1 *can scan and display a picture in less than 30 seconds*

A CD-ROM drive is needed to install the software.

Snapshot Photo Scanner 1 costs $199.

▶ *Eastman Kodak*
(716) 724-4000
www.kodak.com

IBM has announced the Aptiva C6V Video Phone.

According to IBM's Consumer Division, the C6V Video Phone, equipped with Intel Corp. ProShare technology, allows two-way audio/video communication over an ordinary telephone line.

It offers a snapshot feature and large and small video windows. It was designed to let users see and speak with anyone who uses a video phone that complies with the new H.324 standard.

The C6V Video Phone includes a video camera, modem and communications software from IBM. It costs $2,849.

▶ *IBM*
(919) 517-2430
www.ibm.com

Smile International, Inc. has announced two monitors, models CB6536SL and CB6736SL.

Smile's CB6536SL and CB6736SL *monitors generate 832-pixel resolution*

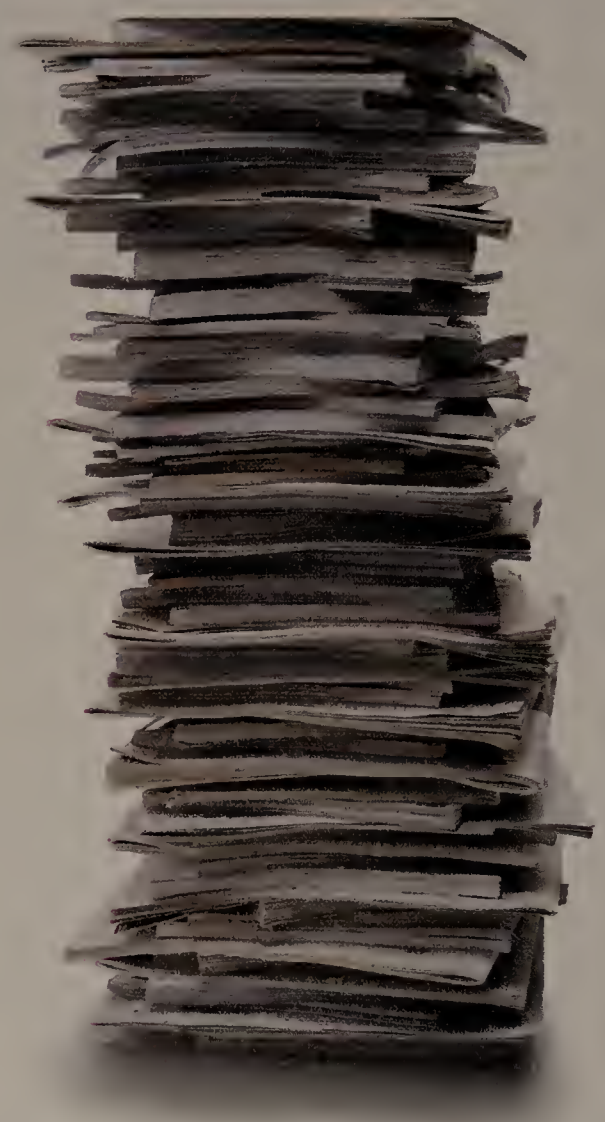
The Costa Mesa, Calif., company said both monitors work with Macintosh systems and generate 832-pixel resolution images at a refresh rate of 75Hz.

Each monitor has a power management system to reduce electricity consumption if a monitor isn't in use.

Model CB6536SL, a 15-in. monitor, will be available late this month. It will cost $488.

Model CB6736SL, a 17-in. monitor, will be available in October. It will cost $778.

▶ *Smile International*
(714) 546-0336
www.smilekfc.com



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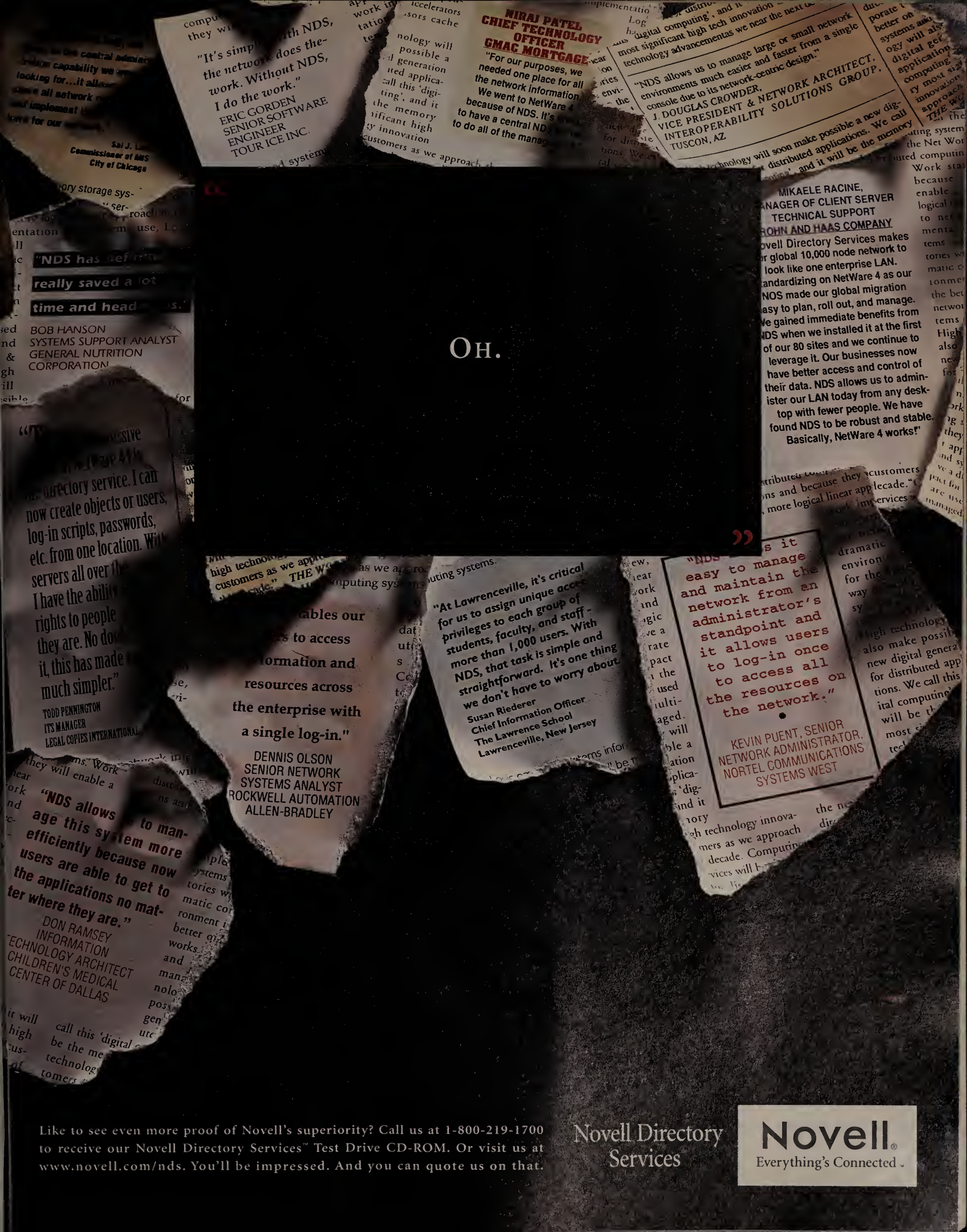

"It's simp... with NDS, the network does the work. Without NDS, I do the work."
ERIC GORDEN
SENIOR SOFTWARE ENGINEER
TOUR ICE INC.
NIRAJ PATEL
CHIEF TECHNOLOGY OFFICER
GMAC MORTGAGE
"For our purposes, we needed one place for all the network information. We went to NetWare 4 because of NDS. It's ... to have a central ND... to do all of the manag..."
"NDS allows us to manage large or small network environments much easier and faster from a single console due to its network-centric design."
J. DOUGLAS CROWDER,
VICE PRESIDENT & NETWORK ARCHITECT,
INTEROPERABILITY SOLUTIONS GROUP,
TUSCON, AZ
MIKAELE RACINE,
...NAGER OF CLIENT SERVER TECHNICAL SUPPORT
...ROHN AND HAAS COMPANY
...ovell Directory Services makes ...r global 10,000 node network to look like one enterprise LAN. ...andardizing on NetWare 4 as our NOS made our global migration ...asy to plan, roll out, and manage. ...e gained immediate benefits from ...DS when we installed it at the first of our 80 sites and we continue to leverage it. Our businesses now have better access and control of their data. NDS allows us to administer our LAN today from any desktop with fewer people. We have found NDS to be robust and stable. Basically, NetWare 4 works!"
"NDS has ... really saved a lot ... time and head...s."
BOB HANSON
SYSTEMS SUPPORT ANALYST
GENERAL NUTRITION CORPORATION
OH.
"... directory service. I can now create objects or users, log-in scripts, passwords, etc. from one location. Wi... servers all over the... I have the abili... rights to people ... they are. No do... it, this has made ... much simpler."
TODD PENNINGTON
ITS MANAGER
LEGAL COPIES INTERNATIONAL
...ables our ...s to access ...ormation and resources across the enterprise with a single log-in."
DENNIS OLSON
SENIOR NETWORK SYSTEMS ANALYST
ROCKWELL AUTOMATION
ALLEN-BRADLEY
"At Lawrenceville, it's critical for us to assign unique acce... privileges to each group of students, faculty, and staff - more than 1,000 users. With NDS, that task is simple and straightforward. It's one thing we don't have to worry about."
Susan Riederer
Chief Information Officer
The Lawrence School
Lawrenceville, New Jersey
"NDS ... it easy to manage and maintain the network from an administrator's standpoint and it allows users to log-in once to access all the resources on the network."
KEVIN PUENT, SENIOR NETWORK ADMINISTRATOR,
NORTEL COMMUNICATIONS SYSTEMS WEST
"NDS allows ... to manage this system more efficiently because now users are able to get to the applications no matter where they are."
DON RAMSEY
INFORMATION TECHNOLOGY ARCHITECT
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Pure Atria to automate processes for building software, **54**

Software

IQ Software gives out its reporting software for free

By Sharon Gaudin

IQ Software Corp. is taking a page from Netscape Communications Corp.'s book and giving away 50,000 copies of its intranet reporting software.

Beginning today, IQ/Live Web is available for free at IQ's World Wide Web site (www.iqs.com). As part of the launch, IQ is teaming with 100 to 200 consulting companies and service providers, giving them specific training in IQ software and making their names available to customers who need help installing the software. The catch: The consulting and other services aren't free.

IQ Software *is trying to seed the market by giving away 50,000 copies of its IQ/Live Web software*

The reporting software is "great," said Eric Mabley, electronic commerce manager at Boston-based International Thomson Publishing, which has about 15 overseas offices. Mabley said he especially likes using IQ's software when compared with his company's previous method, "which was doing the report, printing it out and sticking it in a [Federal Express Corp.] envelope to send to our remote users and sales staff. We easily spent hundreds of thousands of dollars a year."

The free software can be downloaded from the Web or ordered as a CD-ROM. It allows a person to query a database, create a report and post it on a server. The report can then be accessed over the Internet or an intranet via a browser.

IQ/Live Web started shipping earlier for

IQ/Live Web, *page 54*

Office 97 to smooth collaboration

Eases task management when used with Exchange

By Lisa Picarille

Microsoft Corp.'s forthcoming Office 97 is expected to streamline the process of collaborating on document creation in all Office applications — provided that users also run Microsoft's Exchange workgroup product.

Using Exchange in conjunction with Office 97, due this fall, users will be able to better manage tasks that fall into a variety of workgroup categories, including information routing, electronic mail, document collaboration, the sharing of information such as lists and schedules and the automation of business processes, Microsoft officials said.

A user said although his end users could already share Office files over the network, the ability to better collaborate and track changes would be welcome. "These sound like much-needed capabilities, since we have a lot of people collaborating on projects," said Michael O'Donnell, systems administrator at Commonwealth Associates, an investment banking firm in New York that has more than 300 PC users.

Office 97's main focus is collaboration of information. From within all the Office 97 applications, users will be able to automate the time-consuming task of routing documents, collaborating on documents, sharing information and tracking changes to documents.

Features within Word 97

From within the Word 97 word processing application, users will be able to collaborate on the creation of documents, track revisions and versions of documents, add comments to documents during the editing process and review all changes.

With Excel 97, more than one user will be able to simultaneously access a spreadsheet. Multiple users will be able to add, edit, delete and change formatting on a spreadsheet. The changes will be tracked and documented and then rejected or accepted by a user with editing privileges.

Office 97, *page 52*

Software firm alliances come a dime a dozen

IS managers must decide which are for keeps

By Julia King

Software vendors are very hot on partnerships these days. The challenge for information systems managers is deciding which partnerships are truly long-term and which ones are little more than prom dates.

Take Red Pepper Software Co. in San Mateo, Calif. On Aug. 12, the supply chain software vendor announced a joint project with Oracle Corp. Under the deal, which is called Project Soar, the partners promised to give users "unprecedented integration" of their respective client/server applications.

Then, two weeks ago, Red Pepper merged with PeopleSoft, Inc., an Oracle rival. PeopleSoft touts the Red Pepper planning and scheduling technology as a key differentiator of its new manufacturing software.

"You can't take any of these partnerships at face value."

— Ron Ferner, Campbell Soup

Which deal is better?

So which deal is the more strategic, and whose products are more tightly integrated?

And how do IS managers differentiate between the marriages of convenience and committed partnerships?

"You see a lot of ads with the president of one [vendor] company with an arm around the president of another, but you can't take any of these partnerships at face value," said Ron Ferner, director of low-cost business systems at Campbell Soup Co. in Camden, N.J.

"Instead, it boils down to a very detailed and aggressive evaluation of products," Ferner said.

"Just because vendors have an alliance doesn't mean it fits your requirements," said Hal Keiser, president of Lostris, Inc., an independent firm that implements Baan Co.'s enterprise software.

"You still have to go back to basics, which means listing your requirements and comparing them in detail before making a decision," he added.

That's what Chief Information Officer Hank Delevati did at Quantum Corp., a $4.5 billion disk drive manufacturer in Milpitas, Calif.

Quantum recently implemented Oracle's full suite of enterprise applications, but it passed on software from Oracle's partners. Instead, Quantum's users picked products based on their business requirements.

"These decisions can make or break one's career," Delevati said. "That's why your business requirements have to drive the solution."

Joining together

In the past several months, planning and scheduling software and decision-support systems have emerged as prime areas for partnerships between enterprise and niche software vendors.

There also have been buyouts. Shortly before PeopleSoft's purchase of Red Pepper, Baan bought Berclain Group, Inc., a vendor of scheduling software in Quebec. Baan also remains in a joint partnership with I2 Technologies, Inc., a scheduling software vendor in Dallas.

Even vendors acknowledge the difficulty IS managers face in keeping it all straight.

Tips for choosing software partners

- Determine vendors' financial investment in the partnership
- Establish up front how partners will jointly align and support future integrated product releases
- Get it in writing
- Visit sites where the integrated system is up and running

Recently, one customer required a top executive of Manugistics, Inc. in Rockville, Md., and the president of its partner company to sign a guarantee of future support for their integrated products that was written on joint letterhead, said Ken Thompson, executive vice president of supply chain products at Manugistics.

"That was one of the more savvy CIOs," Thompson said.

'net-ready accounting software fits the bill

New software gives executives online access to data

By Thomas Hoffman

Steve Bolick has a vision.

As manager of corporate information technology at Applied Biosciences International, Inc., Bolick wants to develop an executive information system based on Lawson Software's Internet-ready accounting software.

The goal is to give top executives at 22 worldwide business units online access to the company's financial data.

Applied Biosciences International's Steve Bolick: *Internet-based accounting tools 'are the way to go'*

Bolick said he knows he can't dawdle. He will have a "hell-bent-for-leather" fourth quarter helping the pharmaceutical researcher in Arlington, Va., merge with Pharmaceutical Product Development, Inc. in Wilmington, N.C., he said. Meanwhile, competitor Phoenix International has already begun deploying Lawson's Internet-ready Version 7.0 software.

"It's a race, and we can't let ourselves fall behind," Bolick said.

Push is on

Such are the pressures for many information systems managers who see Internet- and intranet-enabled accounting software as a means to simplify the distribution of financial data to internal and external customers.

Interim Technology, a Lyndhurst, N.J., company that provides IT staffing to Fortune 1,000 companies, would like to make customer account information available online "and take a big load off our billing and accounts receivable department," said Steve Lucas, chief information officer at the company.

Interim has been testing Accounts Receivable Release 5.0, World Wide Web-enabled software from Software 2000, Inc. in Hyannis, Mass., since July. Account managers at the company's 31 U.S. branches use the software to check customer accounts online.

Close to customers

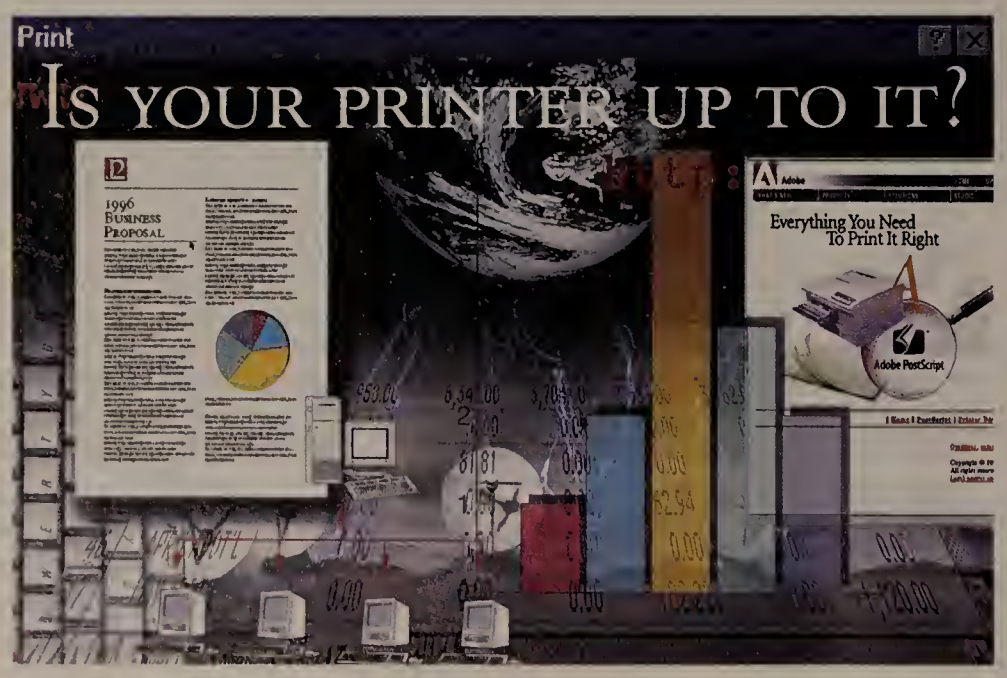
Account managers at Interim who use the Software 2000 package can access customer information from the company's IBM AS/400 midrange system in Lyndhurst through dial-up connections to local Internet service providers. Because Interim's field staffers don't have to connect long-distance to the AS/400, Lucas said he expects the software to pay for itself through telecommunications savings within six months.

"The World Wide Web is great for razzle-dazzle graphics, but we need real-world business applications," Lucas said. "This [accounts receivable] package is consistent with that philosophy." Lucas said he expects to have the software running on the AS/400 by year's end.

Hyperion Software's Spider-Man *integrates information from all of the vendor's accounting, analysis and reporting modules on standard HTML pages*

Indeed, most companies interested in distributing financial data over the Internet want simple, easy-to-manage tools "to generically access information for review and analysis," said Ed Black, director of client/server technology at Aberdeen Group, Inc., a consultancy in Boston.

Software that falls into that category, Black said, includes Spider-Man, an intranet-based accounting system from Hyperion Software Corp. in Stamford, Conn. Spider-Man delivers query results to client browsers through standard Hypertext Markup Language (HTML) pages.



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Briefs

Year 2000 tool unveiled

Liant Software Corp. in Framingham, Mass., has introduced Open PL/1 Version 7.2, a graphical user interface-based extension to its reporting tool. It was designed to analyze and determine the scope of year 2000 problems in a company's existing PL/1 code.

Modeling tool set

Proforma Corp. in Southfield, Mich., has released ProVision Workbench 2.0 for GemStone. The application modeling tool set, which runs on Windows 3.1, Windows 95 and Windows NT, lets developers model business processes in the form of an object model. It automatically generates code in the Smalltalk development language that works with the GemStone object middleware from **GemStone Systems, Inc.** in Beaverton, Ore. ProVision for GemStone costs $1,590.

Iona, Isis turn to NT

Iona Technologies, Inc. and **Isis Distributed Systems** are shipping a Windows NT version of Orbix/Isis, their fault-tolerant object architecture. The system combines Iona's Common Object Request Broker Architecture object system with Isis' system for automatically replicating software modules. Isis is a division of Stratus Computer, Inc. in Marlboro, Mass. Orbix/Isis, which costs $4,000 per developer, can link to NT's object architecture, Microsoft's OLE.

IBM to add European specs to apps

Software to target business

By Torsten Busse

MUNICH, GERMANY

IBM will incorporate business, legal and fiscal requirements specific to Europe in its application framework for business management software as part of a recently announced development initiative.

IBM will implement European requirements related to accounting methods, international currency, date specifications and tax rules in its AS/400-based business management software. The software is sold in Europe under the brand names MAS90 in Germany, DKS in Austria, ACG in Italy and PG in Spain.

Application development

Under a recently announced initiative called the San Francisco Project, IBM is cooperating with 50 international development partners on the design of Java-based, object-oriented application frameworks for building large-scale business management software for vertical markets.

The industry-specific frameworks will cover areas such as distribution, logistics and financial applications. They will be built using a series of reusable object-oriented components.

IBM didn't announce availability of the new frameworks.

Busse writes for the IDG News Service.

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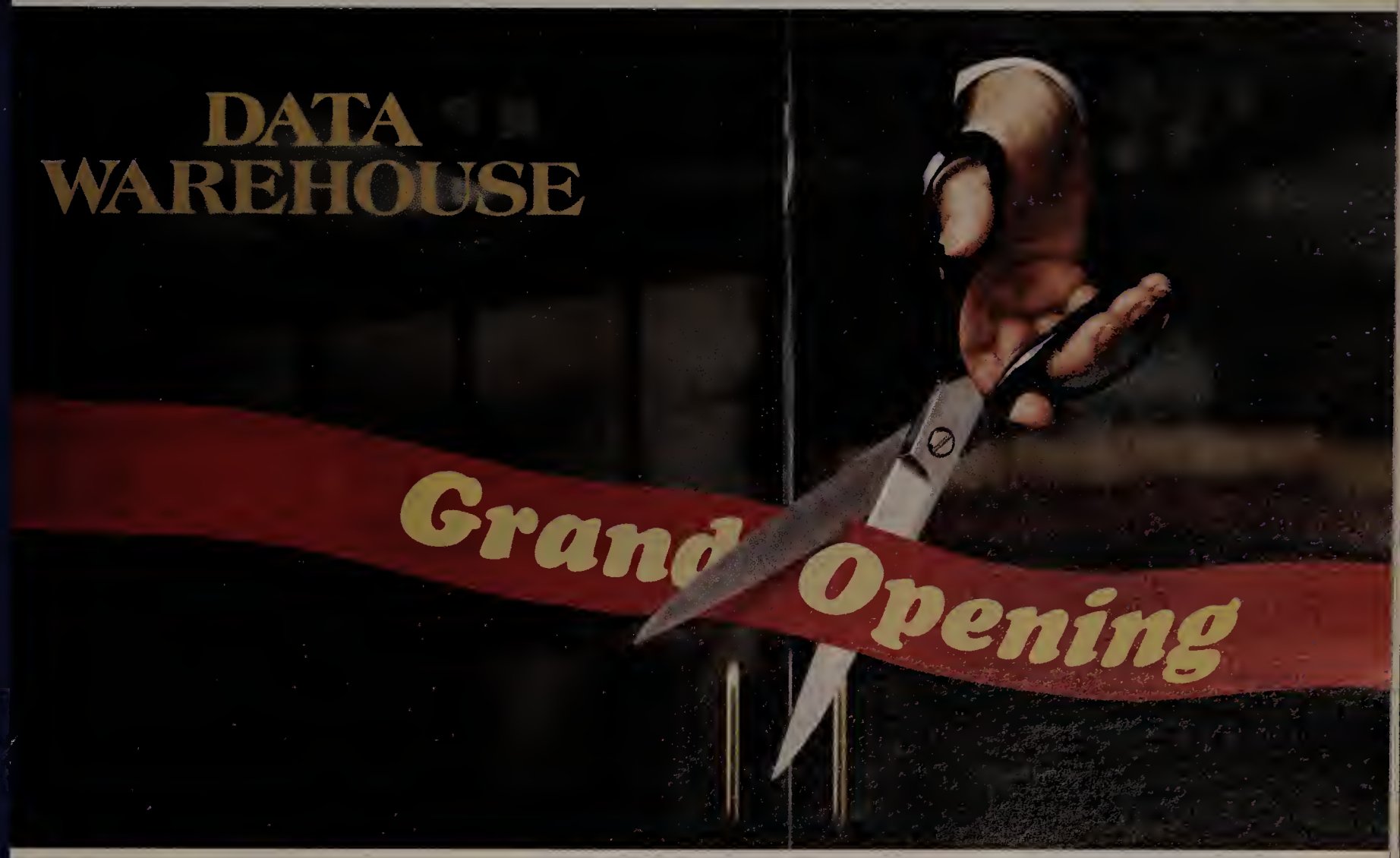

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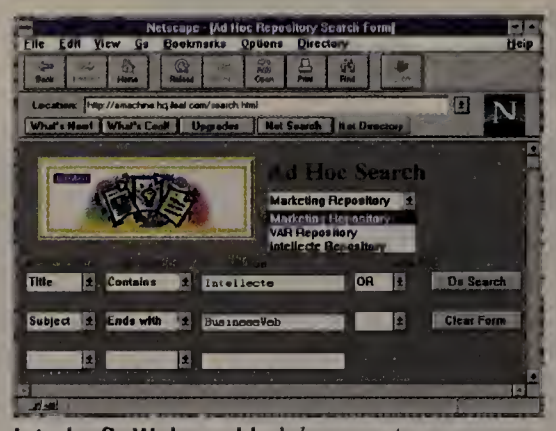
Web technology firms up document management

By April Jacobs

The World Wide Web is becoming an increasingly popular enabler for traditional document-management technology, making access cheaper and simpler for users.

As companies provide more remote access for employees and become more global in operations, it is important for users to be able to work in groups and view information as if they were in a central location, analysts said.



Interleaf's Web-enabled *document management software Intellecte/Business lets Web users get information from online repositories*

Web-enabled document management is a key piece of technology designed to give companies that ability, said Scott McCready, a principal at International Data Corp., a research firm in Framingham, Mass.

Product design engineers at Ford Motor Co. have their eye on a method to get new or revised electronic systems specifications for Ford cars to plants around the globe using Intellecte Business Web software from Waltham, Mass.-based Interleaf, Inc.

Curt Swick, a product design engineer at Ford, said key assets in his department are the ability to control who can revise and track documents and the ability to make sure the right people get those documents.

"The fact that we don't have to make hundreds of copies makes it a lot easier for us, and from a theoretical standpoint, nothing should be able to fall through the cracks," he said.

"We think it's got great potential," he said.

"Document management and [intranets] are a natural fit," said Carl Frappaolo, vice president at Delphi Consulting Group in Boston. "It lowers the barriers."

Frappaolo said the Web gives easy access to information, but the controls inherent in a document-management system — which controls users' access to documents — provide security.

"The last thing you want is for a party to dial in and get an old version of what they need to see," he said.

Applications such as those at Ford can also save large amounts of labor, McCready said. He said his research shows that up to 25% of document labor can be attributed to the tracking of those documents when there isn't a management system.

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Office 97 to smooth collaboration

CONTINUED FROM PAGE 49

Besides document collaboration, Office 97 adds Microsoft's Instant Groupware facilities. Most of those features consist of predesigned templates and prebuilt structures for managing the most commonly shared types of information, including phone lists, contact names and schedule information.

Group work

Groupware features of Office 97 when used with Exchange:

- Streamlines business processes
- Instant Groupware
- Document collaboration
- Information routing
- E-mail

Making it easy

Using Exchange with Outlook, an Office 97 application that provides messaging and information management facilities, corporate systems developers who are building custom workgroup solutions can create forms or applications to streamline their business processes. These may include discussion databases, document libraries and tracking applications.

Microsoft plans to provide several predesigned forms and applications that can also be customized. But users will also be able to take existing forms, such as an expense report created in Excel, place them in an Exchange public folder and share them with other users.

An analyst said the capabilities offered by Office 97 are so significant that users should get on board as soon as the product is available.

"Office 97 is a major leap forward and may be the reason users are going to want to deploy it, even if it means making the commitment to move from Windows 3.x to Window NT 4.0 or Windows 95," said Dave Ferris, president of Ferris Research, a market research company in San Francisco.

Office 97 add-ons

Software Publishing Corp. last week announced ActiveOffice, an add-on to Microsoft's forthcoming Office 97. It simplifies the process of extracting text and numbers from any Office application and helps create visual representations of those numbers.

By highlighting specific text or numbers in the document and then clicking once in the ActiveOffice Gallery, words and numbers automatically turn into visuals. Previously, users needed to go through the time-consuming task of creating visual elements in charting, drawing and presentation packages.

ActiveOffice's Intelligent Formatting lets users change layouts and color schemes by clicking on a button. For example, a user could highlight a range within an Excel spreadsheet, click on a preformatted color table within the ActiveOffice Gallery, then take the chart or graph that was created and add it into a Word document.

A beta version of ActiveOffice will be available online at www.spco.com beginning next month. The final version, priced at $50, is slated for release later this fall, to coincide with the launch of Microsoft Office 97.

For optimal performance, ActiveOffice requires a Pentium processor with 16M bytes of memory and a Super VGA (800- by 600-pixel resolution) display. — *Lisa Picarille*

New Products

FCAD, Inc. has introduced FelixCAD, a three-dimensional computer-aided design (CAD) software made specifically for Windows NT and Windows 95.

According to the Novato, Calif., company, FelixCAD incorporates Windows Multiple Document Interface. Users can view and edit up to four drawings with up to four views per drawing at once, for a total of 16 open documents on screen in any combination of two or three dimensions.

Pricing for FelixCAD begins at $995.

▶ *FCAD*
(415) 893-1240
www.fcad.com

Easy Analytic Software, Inc. has launched The Right Site for the Web, a World Wide Web site designed to help businesses with demographic analysis.

According to the New York software publisher, The Right Site can help businesses analyze which geographic areas have high concentrations of potential customers.

Access to The Right Site for the Web is free.

▶ *Easy Analytic Software*
(718) 740-7930
www.easidemographics.com

Time Line Solutions Corp. has announced Project Management Integrator (PMI) for Novell, Inc.'s GroupWise 5, a workgroup software application to provide two-way communication between GroupWise 5 and Time Line 6.5 for Windows.

According to the Novato, Calif., firm, PMI lets teams share project information. It was designed for managers to distribute assignments and schedule changes from Time Line to team members via GroupWise's expanded electronic-mail system.

PMI is free as part of GroupWise 5, which costs about $500.

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Firm to automate processes for software development

By Frank Hayes

As corporate software developers face bigger and more complex projects, they are also getting less time to put the software into users' hands. And that's putting pressure on managers to whip their software development process into shape.

Hoping to ease that pressure, Pure Atria Corp. last week announced ClearGuide, an add-on to the company's popular ClearCase configuration management system that lets development managers automate standard processes for building software. The Unix version will ship in the first quarter next year, with a Windows NT version to follow later, officials at the Sunnyvale, Calif., company said. The Unix version will cost $2,700.

Software development

"Developing large software products has become very complex. Companies are doing parallel development, and that requires additional coordination," said Howard Cohen, a development strategist at Timefold, a consultancy in Alameda, Calif.

Parallel development — in which several parts of a project are developed at once by different teams — seems like a natural approach for client/server applications, where each piece of software runs on a different platform.

Many corporate information systems shops have homegrown systems for tracking software development, but often they don't adapt well to client/server projects. And simply designing a new set of procedures on paper doesn't fill the bill either, users said.

"We need ways to document the [software development] process but also to increase our information-sharing between us," said Fred Krimmel, manager of systems development at American Hotel Register Co. in Northbrook, Ill.

So developers are turning to tools that can coordinate the work programmers do according to a well-defined process. Such tools include Process Engineer from LBMS, Inc. in Houston; PCMS Dimensions from SQL Software, Inc. in Vienna, Va.; and Transform and SE Companion from SHL Systemhouse, Inc. in Ottawa. Consultants such as Andersen Consulting in Chicago and Coopers & Lybrand in Princeton, N.J., also have tools for automating a standard software development process.

And unlike the software development methodologies that many developers remember unfondly from the past, the newer tools automate much of the grunt work associated with development.

Making the development process less haphazard also should improve software quality.

Pure Atria's ClearGuide *lets development managers create standard processes for software development*

Brief

Siemens, TI join forces on software framework

Siemens Nixdorf Informationssystems AG in Paderborn, Germany, and **Texas Instruments, Inc.** in Plano, Texas, have announced a plan to work together on a new software development framework. The new product will integrate TI's Composer high-end development system with Siemens Nixdorf's ComUnity rapid-development tool set. The companies wouldn't say when the Windows 95 and Windows NT-based product will appear.

TI also announced Performer, a scaled-down version of its Composer development tool set designed for developing scalable workgroup applications. The model-driven development system, which was designed for Windows 95 or Windows NT clients, is scheduled to ship this fall. It costs $4,995.

IQ/Live Web

CONTINUED FROM PAGE 49

prices that range from $3,995 on Windows NT and low-end Unix platforms to $19,995 on high-end Unix servers.

Jay Chaudhry, senior vice president at IQ Software, said he isn't worried about alienating users who already have bought the software. He said the giveaway is good for only one client copy of IQ/Live Web. Companies that want more clients will have to buy them.

Ezra Gottheil, a senior analyst at Hurwitz Group, Inc. in Newton, Mass., said the launch offers information systems managers a way to test-drive the software, but he warned that free software isn't the equivalent of a free ride.

"The cost of the software is zero, but what is the cost of learning how to use it and beginning to use it?" Gottheil asked.

Herb Edelstein, president of Two Crows Corp., a data mining consultancy in Potomac, Md., said the purchase price of software often is a fraction of the overall cost. "It's a matter of training, upgrades, installation, time people spend with the software and maintenance," he said. "I'm always dubious about these things."

New Products

Blue Sky Software has announced Visual SQL 4.2, to integrate with Visual C++ Enterprise Edition and Visual C++ 4.x.

According to the La Jolla, Calif., company, Visual SQL extends Visual C++ with visual designer, intuitive wizards and object-oriented data access without leaving the Microsoft Corp. Visual C++ environment.

Visual SQL 4.2 costs $1,499. The upgrade to it can be downloaded for free at Blue Sky's World Wide Web site.

▶ *Blue Sky*
(619) 459-6365
www.blue-sky.com

MathTools Ltd. has announced Matcom V2, a Matlab-to-C++ compiler, and C++ Matrix Math library.

According to the Horsham, Pa., company, Matcom V2 compiles Matlab source files to C++ source code. The C++ code and library were designed to be integrated into products, royalty-free. That eliminates the need to translate the algorithm prototype.

Matcom V2 costs $300.

▶ *MathTools*
(215) 957-1719
www.mathtools.com

Concentric Data Systems has announced Arpeggio for the Developer, a 32-bit tool to help developers integrate Arpeggio data access and publishing capabilities into customer applications.

According to the Westboro, Mass., company, (a subsidiary of Wall Data, Inc.) Arpeggio for the Developer provides three separate application programming interfaces that provide tools for building information publishing applications quickly.

Pricing for Arpeggio for the Developer starts at $400.

▶ *Concentric Data Systems*
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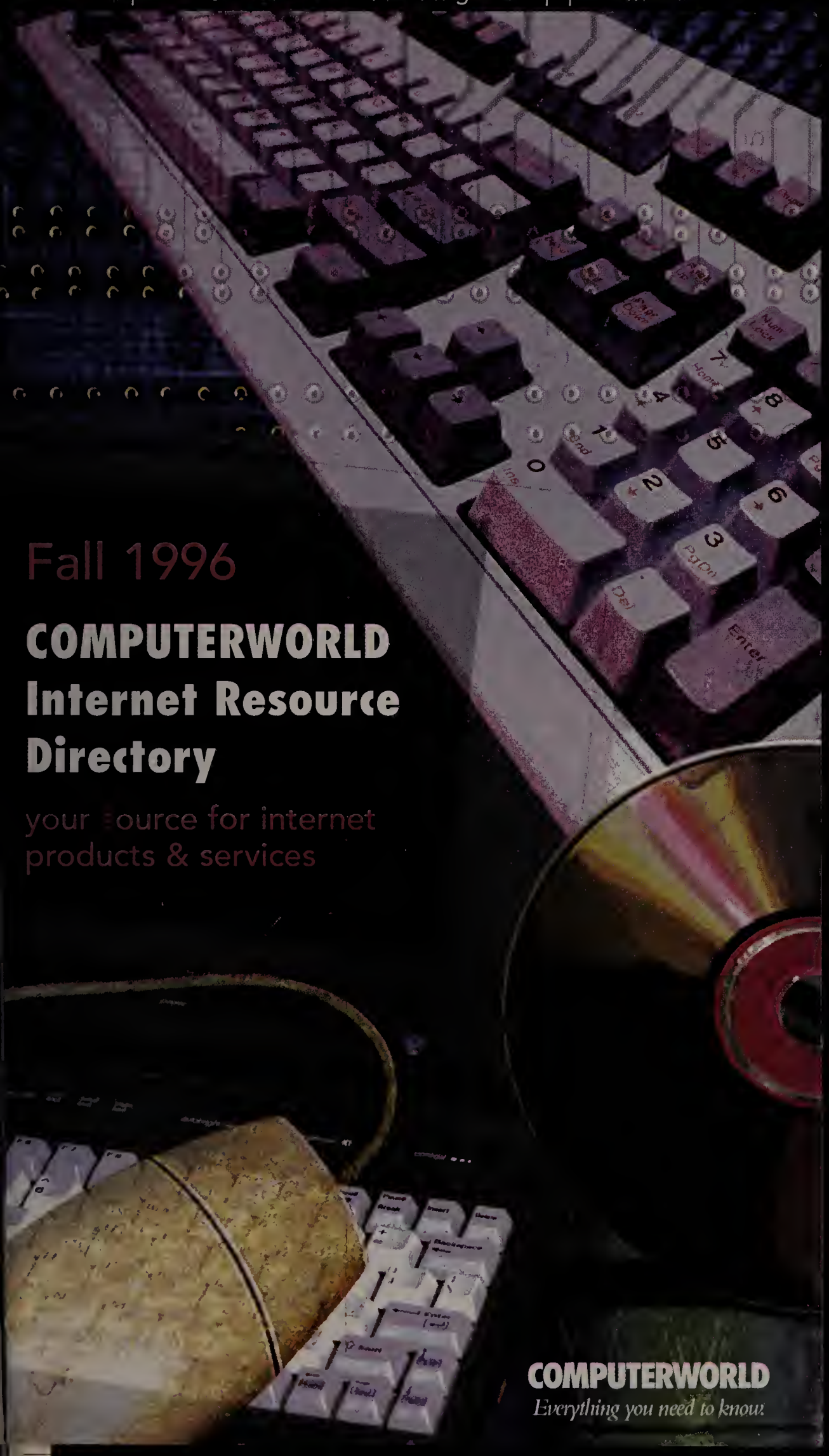

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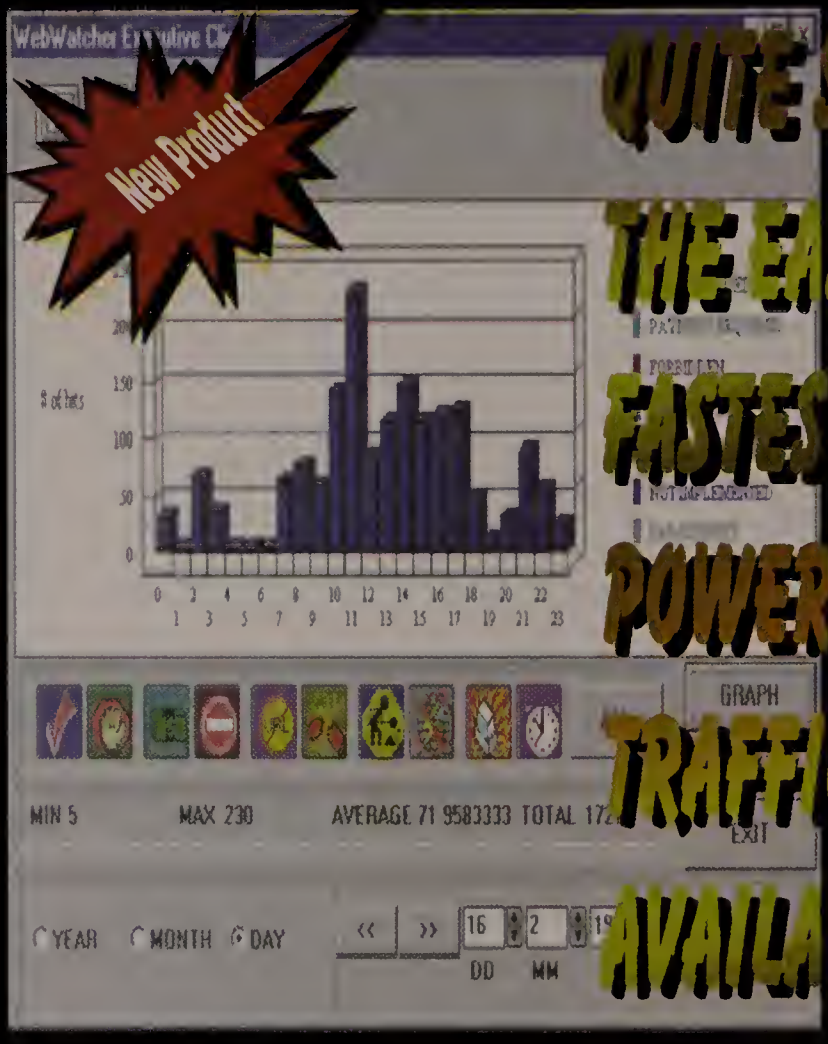

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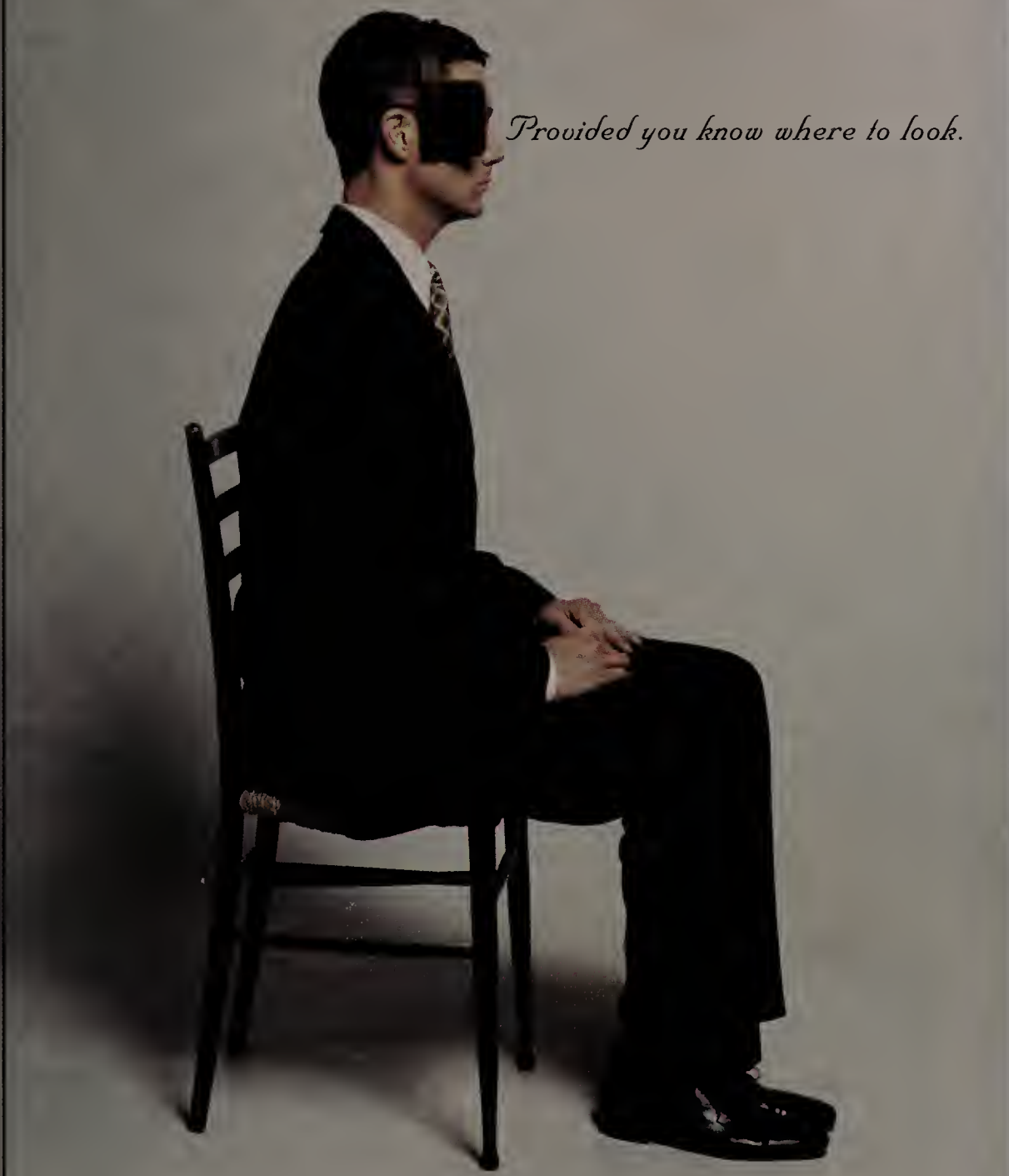

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Netscape Communications, Inc.
http://www.excite.com

Novell, Inc.
http://netware.novell.com
800-NETWARE

NYNEX Corp.
http://www.niyp.com/enterbusiness.html

The Inter.net
http://the-inter.net/www/future21

Wingra Technologies Inc.
http://www.wingra.com
800-544-5465
Email integration/directory synchronization between LAN, Internet and host-based systems. Web access to X.500 directory. Easy to install/use.

Yahoo
http://www.yahoo.com

Security

Internet Security Systems, Inc.
http://www.iss.net
800-776-2362
Internet Security Systems pioneered the technology for attack simulation and network security audit. Its Internet scanner is the first and most comprehensive security audit tool available.

Pilot Network Services
http://www.pilot.net/c
888-407-4568
Pilot Network Services connects clients to the Internet securely, stopping intruders before they reach you. Pilot's Dynamic Firewall™ is closely monitored and upgraded to block new attacks.

Turbo-Internet Service

Hughes Network Systems-DirecPC
http://www.direcpc.com
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http://www.forte.com
510-869-3400

FTP Software, Inc.
http://www.ftp.com
508-685-4000

Intel Corp.
http://www.intel.com
800-548-4725

MCI Telecommunications
http://www.mci.com
770-668-6000

Oracle Corp.
http://www.oracle.com
800-ORACLE-1

UB Networks, Inc.
http://www.ub.com
800-777-4526

Application Suites

Firefox Communications
http://www.firefox.com
800-230-6090

Frontiertech
http://www.frontiertech.com
414-241-4555

Gradient Technologies
http://www.gradient.com
508-624-9600

Lotus Development Corporation
http://www.lotus.com
800-553-4270

Verity, Inc.
http://www.verity.com
415-960-7600

Browsers

Attachmate Corp.
http://www.attachmate.com
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CompuServ
http://www.spry.com
206-447-0300

Frontier Technology Corp.
http://www.frontiertech.com
414-241-4555

FTP Software, Inc.
http://www.ftp.com
800-282-4387

IBM
http://www.ibm.com
800-426-3333

ICONOVEX
http://www.iconovex.com
612-943-0292

Microsoft Corp.
http://www.microsoft.com
800-426-7400

NetManage, Inc.
http://www.netmanage.com
408-973-7171

Netscape Communications Corp.
http://home.netscape.com
415-254-1900

NLIGHTN
http://www.nlightn.com
800-654-4486

Quarterdeck Corp.
http://www.qdeck.com
310-392-9851

Spyglass Technologies
http://www.spyglass.com
708-505-1010

Symantec Corp.
http://www.delrina.com
800-441-7234

The Wollongong Group, Inc.
http://www.twg.com
800-872-8649

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Accent Worldwide, Inc.
http://www.accentsoft.com
714-223-0620

Aimnet Corp.
http://www.aimnet.com
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Alis Technologies, Inc.
http://www.alis.com
514-747-2547

Allaire Corporation
http://www.allaire.com
612-831-1808

Amicus Networks
http://www.amicus.com
512-418-8828

Arcom Electronics
http://www.arcom.com
408-452-0678

Attachmate Corp.
http://www.attachmate.com
800-872-8649

BateTech Software
http://www.batetech.com
303-763-8333

Bitwise Internet Technology
http://www.bitwise.net
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http://www.capella.com
415-591-3400

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http://www.caravelle.com
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http://www.spry.com
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Distinct Corp.
http://www.distinct.com
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05-961-8700

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ttp://www.empac.com
10-683-8800

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ttp://www.firefox.com
00-230-6090

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ttp://www.ffg.com
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TP Software
ttp://www.ftp.com
08-685-4000

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ttp://www.fulcrum.com
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ttp://www.gcomm.com
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ttp://www.hicam.hitachi.com
08-986-9770

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ttp://www.ids-net.com
12-236-4374

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ttp://www.intercon.com
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ttp://www.ileaf.com
17-290-0710

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ttp://www.ipinc.com
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http://www.jsb.com
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Libertech, Inc.
http://www.sitetech.com
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Luckman Interactive
http://www.luckman.com
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MCS
http://www.mcsdallas.com
214-659-1514

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http://www.microsoft.com
206-882-8080

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http://www.netcarta.com
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Netcom Online Communications Services, Inc.
http://www.netcom.com
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http://www.netgen.com
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http://www.netmanage.com
408-973-7171

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800-723-1166

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http://www.netphonic.com
415-962-1111

Network-1 Software & Technology, Inc.
http://www.network-1.com
800-netwrk1

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http://www.novell.com
800-NETWARE

On Technology Corp.
http://www.on.com
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Quarterdeck Corporation
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http://www.symantec.com
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Quest Server is a simple but powerful database publishing and search tool. Quest bubbles up the closest matches to the user's target criteria giving users the Best Answers. Every Time. Guaranteed.

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Fabrik Communications, Inc.
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Fabrik is a value-added Internet e-mail service provider, connecting LAN environments (Lotus cc:Mail, Lotus Notes, Microsoft Mail, Microsoft Exchange, Groupwise) to WAN's.

TenFour US, Inc.
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Apple Computers, Inc.
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Communications Services, Inc.
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Nortel/Northern Telecom
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801-429-7000

Open Market, Inc.
http://www.openmarket.com
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Silicon Graphics, Inc.
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Sterling Commerce
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UniDirect
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UniKix Technologies
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800-765-2826

Van Nostrand Reinhold
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212-780-6133

V-One Corporation
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Electronic Software Distribution

MeterNet Corporation
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Meternet specializes in technology tools and services that enable ESD over Internet, cable and satellite channels. Customer benefits include try before buy and pay per use software metering.

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Cylink Corp.
http://www.cylink.com
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http://www.icverify.com
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Netscape Communications Corp.
http://home.netscape.com
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http://www.network.com
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http://www.nortel.com
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UUNet Technologies, Inc.
http://www.uu.net
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V-One Corp.
http://www.v-one.com
301-838-8900

Fax Gateway

Faximum Software, Inc.
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604-925-3600
Faximum Software is the leading supplier of fax (Web/Fax and SMTP E-Mail/Fax) gateway software for Internet/Intranet UNIX servers.

Firewalls

Ascend Communications, Inc.
http://www.ascend.com
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Border Network Technologies
http://www.border.com
416-368-7157

Checkpoint Software Technologies
http://www.checkpoint.com
415-562-0400

Cyber Guard Corporation
http://www.cyberguardcorp.com
800-666-4273

Digital Equipment Corp.
http://www.networks.digital.com
508-486-2111

Global Technology Associates, Inc.
http://www.gta.com
800-775-4GTA

Harris Computer Systems
http://www.hcsc.com
800-666-4544 x5513

IBM
http://www.ibm.com
800-426-3333

Internet Security Corp.
http://www.security.com
617-863-6400

Livermore Software Laboratories, Inc.
http://www.lsli.com
713-974-3274
For information on LSLI's Portus secure firewall, please write us at portusinfo@lsli.com or call toll-free 800-240-5754

National Computer Security
Association
http://www.ncsa.com
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Netguard Ltd.
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April 23, 1996
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http://www.norman.com
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Raptor Systems, Inc.
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Trusted Information Systems, Inc.
http://www.tis.com
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Full range of products and services including Gauntlet™ Firewalls, consulting, vulnerability analysis, installation, auditing and training.

Groupware

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Applicom Systems
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800-426-6283 206-644-4010

Beacon Interactive Systems
http://www.beaconis.com
617-646-2645

Bittco Internet Groupware
http://www.bittco.com
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CA Facilitator
http://www.facilitate.com
805-682-6939

Changepoint
http://www.changepoint.com
905-886-7000

Clear Blue Network Systems Inc.
http://www.clearblue.com
415-323-3380

Collaborative Strategies
http://www.collaborate.com
415-282-9197

Communications Technology International
http://www.consensor.com
800-891-5236

Forté Software
http://www.forteinc.com
619-431-6400

Group Logic
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Groupware Technologies
http://www.grouptech.com
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Lotus Notes
http://www.lotus.com

Novell
http://www.novell.com
800-346-7177

ON Technology
http://www.on.com
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Onyx Software
http://www.onyxcorp.com
206-451-8060

Open Text Corp.
http://www.opentext.com
519-888-9910

Pangea Corp.
http://www.pangea.com
412-381-9944

Sanga Corp.
http://www.sangacorp.com
617-272-8500

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SoftArc
http://www.softarc.com
800-SOFTARC

Trax Softworks
http://www.webcom.com/traxsoft
800-367-8729

Ultimus
http://www.ultimus1.com
919-233-7331

HTML Authoring

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Aimtech
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603-883-0220

Folio Corporation.
http://www.folio.com
801-229-6700

Frontier Technologies
http://www.frontiertech.com
414-421-7084

Fujitsu Active Information
http://www.activeinfo.com
408-456-7249

InContext Corporation
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Novell, Inc.
http://www.novell.com
800-NETWARE

SoftQuad Inc.
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UniDirect
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Host-to-Web Publishing Tools

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Pegasus Imaging Corporation
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The leader in digital image compression providing solutions for image compression and color handling. Our stuff is great for the web, no more waiting to download images.

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Multilingual Software

Accent Worldwide Inc.
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NSO
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ttp://www.inmagic.com
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ttp://www.ids-net.com
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ttp://www.ileaf.com
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Interval Systems
http://www.interval.net
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LinkStar Communications Corp.
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Search Tools/Engines

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Security

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Folio Infobase Web Server allows users to access infobases using HTML browsers. Alteration of the infobase format is not necessary; translation of the infobase to HTML pages is dynamic.

IBM
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Luckman Interactive, Inc.
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McAfee
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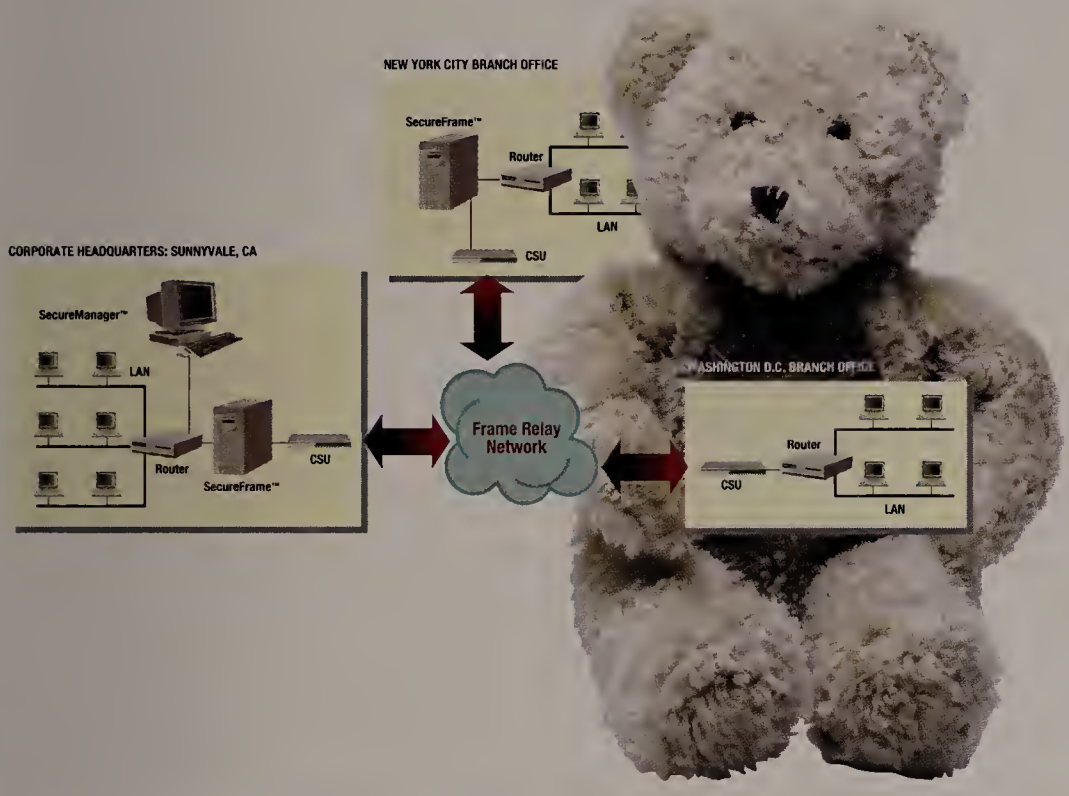

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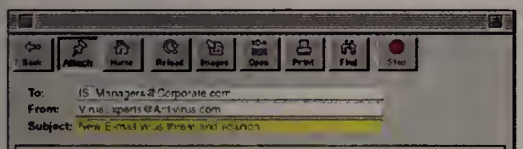

InterScan E-Mail VirusWall, virus protection for Windows NT by Trend

E-mail attachments are the primary carriers of the Word macro virus - the fastest spreading virus in computer history. To catch this new virus you're going to need the latest technology. Desktop scanners won't work. You need technology that scans fast so it doesn't slow down your mail system - technology that's flexible enough to fit into your complicated network without configuration - technology that stops viruses cold BEFORE they enter your intranet.

E-mail VirusWall for NT servers, scans Internet e-mail traffic right out of the box. Load it on to your E-mail server, or on to an NT machine that works as an SMTP relay host. E-mail VirusWall scans encoded attachments for viruses. When a virus is found, the infected attachment is stripped off, a warning is inserted into the original e-mail and sent to the recipient, and an alerting e-mail is sent to administrator and the original sender of the file. All of this is done automatically!

Trend's integrated virus scanner catches 100% of in-the-wild viruses (including the Word macro virus). It can decode and decompress mail attachments, and scan them in 0.12 seconds per file. It uses multi-threaded programming for best NT performance. The automatic virus pattern update service from Trend keeps your anti-virus up-to-date without administration hassle, and the experts at www.antivirus.com keep you informed of the latest virus out breaks and their solutions.

No wonder industry leaders such as Lotus, Novell, SCO, Intel, Control Data Systems and NetManage all utilize Trend's anti-virus technology.

Download your free evaluation copy of E-mail VirusWall for NT today from http://www.antivirus.com. (There is a special VAR program for Microsoft authorized Solutions Providers at www.antivirus.com/var.html).

"VirusWall is a key part of the security measures PNC Bank of Pittsburgh has implemented in conjunction with its online banking services.... 'In overall testing, VirusWall appeared to be the most robust' said Mike Goddard, assistant vice president for information security at PNC."

PC Week Labs
July 18, 1996

"Better virus detection methods for e-mail attachments will help considerably in reducing the macro virus problem. Trend Micro has a reputation for innovation and we applaud this excellent work."

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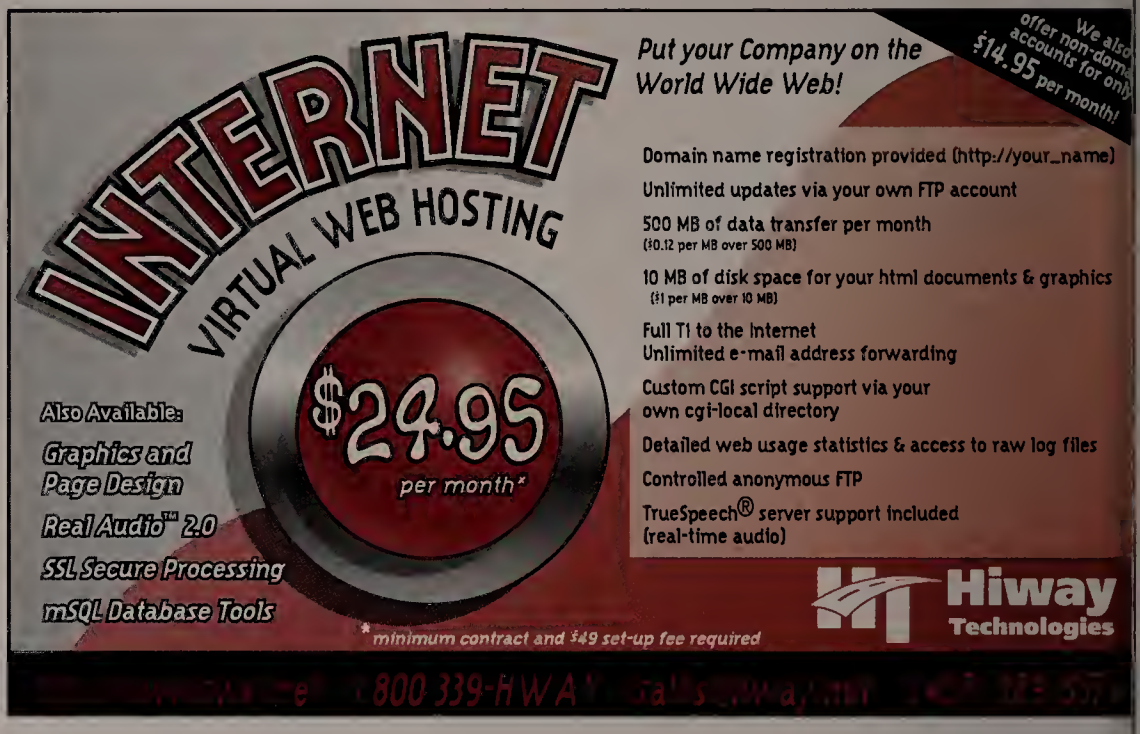

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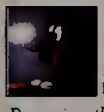

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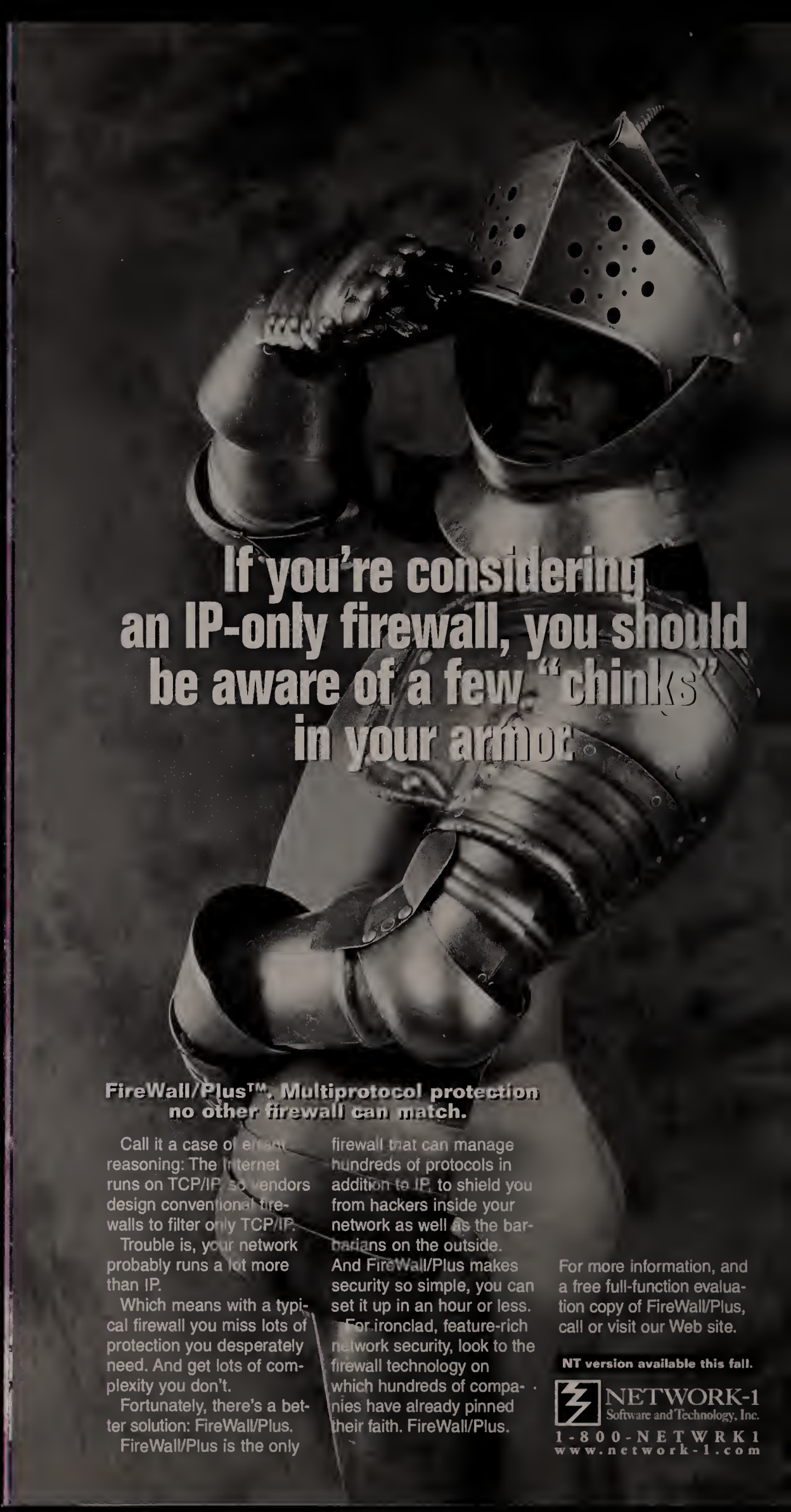

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Commentary

This time, do Rmon right

Patrick Dryden

Here's hoping that the days of wasted network management potential may be ending.

Many big networks contain ls for diagnosing problems on far- ng segments that administrators n on infrequently, if at all. Until re- tly, Remote Monitoring (Rmon) ls haven't really solved the prob- ns that network administrators ded to solve. Now, vendors are rting to extend the tools to monitor re tasks than ever, and they're try- to make their tools interoperate. Network administrators need Rmon ls to treat their charges with re- ct, just as rattlesnake handlers re- rd their wards. Both groups watch stantly for a strike that could prove adly.

nvenient care

e Rmon specification defines basic ormation that can be gathered and orted about the performance of a gle network segment. That saves tral caretakers the delay and has- of lugging diagnostic gear to a ver room, department or field ice when their snakes bite.

Without leaving a handy console, ministrators can run a monitoring plication to track the utilization and rors on part of their network and n capture and examine packets re.

If they are lucky, that is.

Turning on Rmon often fails be- use of the blind spots caused by itches or the inadequate support of eded data groups by some vendors' ents, users say. And it strains the rformance of the gear that an agent supposed to monitor, they complain.

Vendors have been correcting these oblems in the past year so users can grade agents and modules to realize eir remote fault-management capa- lities.

But many Rmon vendors have ex- nded their tools beyond basic seg- ent troubleshooting. They track ap- ication traffic and conversations yond segments. And those propri- ary extensions lock in users to a sin- e vendor's embedded agents, probes nd monitoring application.

Many of those extensions have been

Rmon, *page 65*

ryden is *Computerworld*'s senior editor of twork management.

The Enterprise Network

Web-olution

Network administrators use intranets for info distribution, remote troubleshooting

By Patrick Dryden

The World Wide Web has already changed the way some administrators manage their networks, systems and applications.

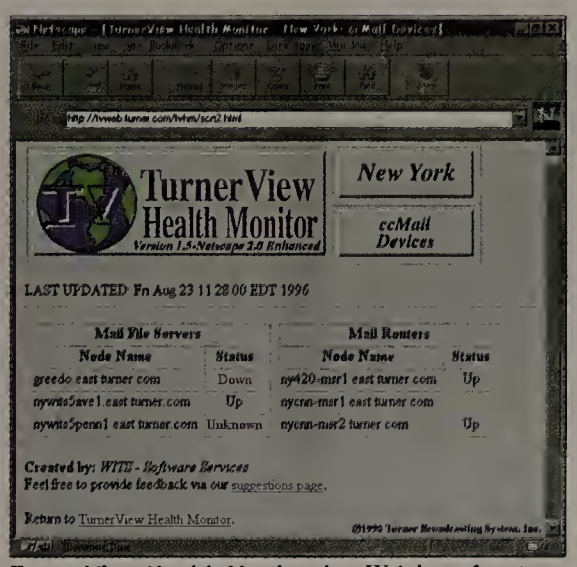
Users relish the Web's ability to freely distribute management information that traditionally was difficult to access remotely or was restricted to gurus who manned a few powerful consoles. Because that ability is so new, there aren't independent measures of how many people take advantage of it.

Time-saver

But so far, so good, users said. "Putting reports on our intranet saves at least four to five hours a week that we used to spend generating paper reports and answering specific questions," said Mons Ellingson, leader of the network management engineering group at Arizona Public Service Co. in Phoenix.

Besides assisting support staff throughout the statewide network, Web access helps software developers examine the impact of new applications on network traffic, Ellingson said.

Web-based access to network health reports has helped David Brown, director of network services at *The New York Times*, get a jump on diagnosing problems before they affect his users.



TurnerView Health Monitor *is a Web interface to various integrated network management tools*

Brown doesn't worry anymore about what bad news might await him when he reaches work. Each morning, he checks for immediate and emerging performance problems on his network via a browser-equipped laptop in his bedroom.

"Now I can see if something is out of whack from home when I get up in the morning," Brown said. Then he can click on a router interface or a wide-area network connection to bring up a utilization screen. With this early warning, he can call a central operator to research the cause, and he can consider the situation during his commute.

Traditional Unix management tools also enable remote access via an X Window System interface. But many administrators complain those sessions demand too much network bandwidth, consume system resources and require operator expertise and authorization.

Intranet access, however, makes the same data available through a simple browser interface — to any location and on diverse platforms. That means broader access to management information.

For example, anyone on the

Web-olution, *page 65*

Remote access, WAN links in store

By Bob Wallace

Attendees at Networld/Interop '96 this week in Atlanta will find vendors placing a strong emphasis on remote access and adding long-awaited wide-area network options to their switches.

With these easily expandable and more robust remote-access systems, network administrators can add more end users without having to buy a lot of boxes, which is expensive and causes administration headaches.

"Users are fed up with having to buy a new box whenever they need to add ports for more remote users," said Barbara Maaskant, director of information services at Emory University's Goizueta Business School in Atlanta. "The first wave of systems dead-ended users, so new scalable systems without performance restrictions will be welcome."

Emory uses remote access to extend

Remote access, *page 65*

Barbara Maaskant, *director of information services at Emory University: 'Users are fed up with having to buy a new box whenever they need to add ports for more remote users'*

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Bay to offer switching modules for System 5000

By Bob Wallace

LAN switching help is finally on the way for the legions who use Bay Networks, Inc.'s System 5000 hubs.

Years after it promised LAN switching for the System 5000 high-end hub, the Billerica, Mass., vendor recently said it will phase in delivery of the long-awaited and sorely needed switching modules in the next three months.

To use the modules, users must add a new backplane to their System 5000s. The backplane will cost about $2,500, not including the cost of the modules.

The modules are based on technology Bay acquired when it bought Centillion Networks, Inc. last year. They will be rolled out according to the following timetable:

- Due in 30 days: a 16-port switched Ethernet module that will cost $7,495 and an eight-port version with enhancements. The eight-port module will cost $8,495.
- Due in 60 days: a 14-port switched Ethernet module with two 100Base-T ports that will cost $8,395. On the Asynchronous Transfer Mode front, Bay will ship two four-port modules. Prices will start at $8,995.
- Due in 90 days: a version of the 14-port module that supports 100Base-T over fiber. It will cost $9,395.

Bay also announced a software upgrade that will add routing functionality to the Centillion 100 and System 5000 switches. It will be available in middle of next year.

Briefs

Mobile middleware

Tactica Corp. in Portland, Ore., has shipped Caprera, a middleware system designed to support laptops and other mobile users. The middleware, which runs on Windows, OS/2 and Unix servers, lets users launch complex transactions and database queries and collect the results later. Pricing starts at $1,500 per user.

IMAP gains ground

Fujitsu Software Corp. has shipped more than 100,000 versions of its Embla Internet electronic-mail client, according to the company. Embla is one of the few commercial clients based on the Internet Mail Access Protocol (IMAP), a standard that gives Internet mail users more options than Post Office Protocol to manage their in-boxes.

Shiva developer's kit

Shiva Corp. in Bedford, Mass., has announced a software developer's kit. Shiva officials said the Shiva Dial-in kit, gives developers multiple platform and language options, including direct support for C, Visual C++ or Visual Basic. The kit is available on Shiva's World Wide Web site at www.Shiva.com. It costs $995 per developer.

GroupWise spruces up

Novell, Inc., Xerox Desktop Document Systems and **WhetStone Technologies** are adding imaging capabilities to Novell's GroupWise electronic-mail and document management software. Users will be able to view, store, edit and route scanned image files via GroupWise's Universal Mail Box. The product will use Xerox's XIF format for transferring images in an E-mail message without slowing down the network. It will be available as part of GroupWise 5.0, due to ship this month. An enhancement pack will ship later.

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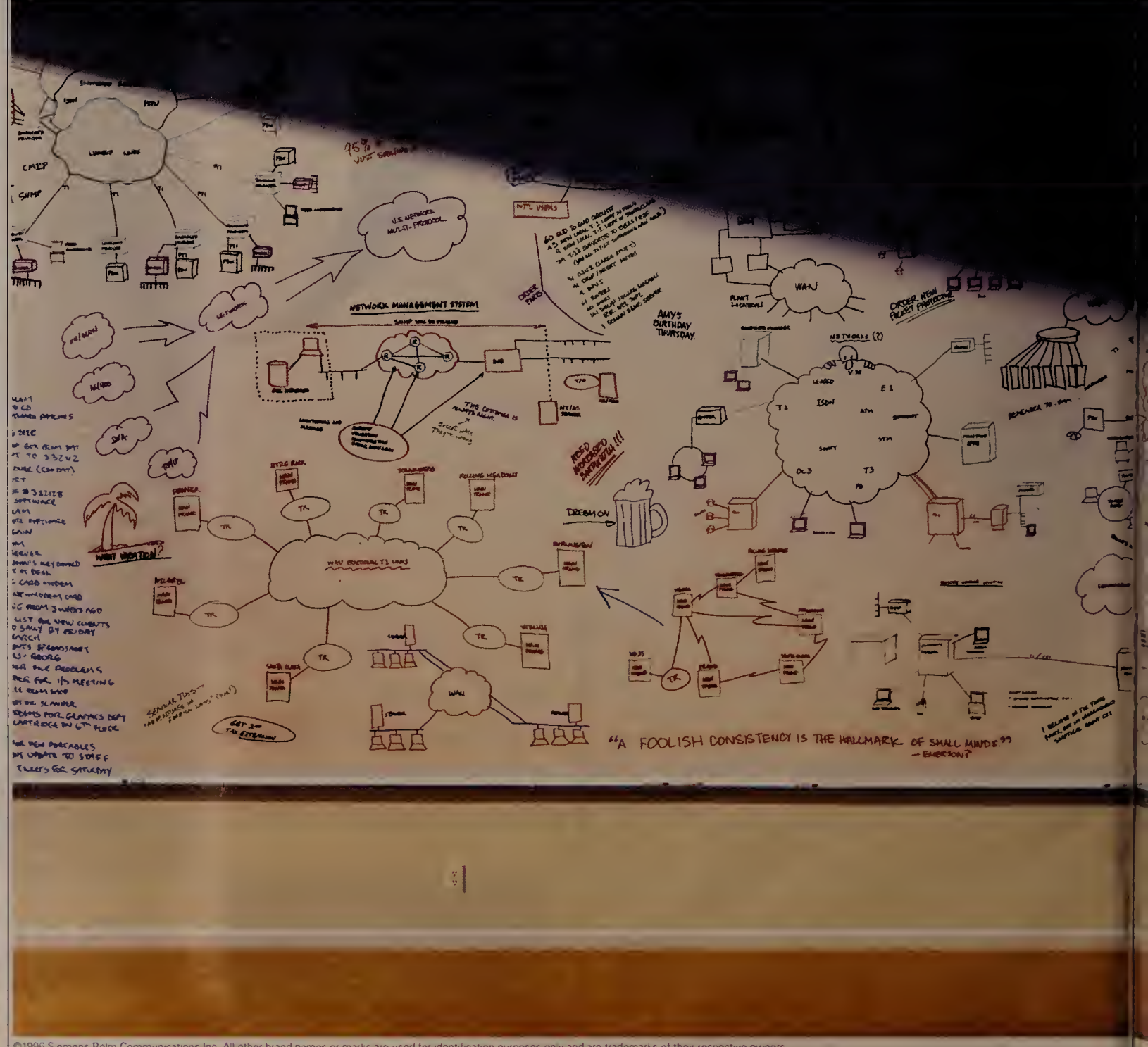

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New Products

Axis Communications, Inc. has introduced Axis StorPoint CD/T, a family of CD-server plug-in modules.

According to the Woburn, Mass., company, Axis StorPoint CD/T can be used as an intranet/Internet World Wide Web server so that CDs can be read using any Web browser even if the CDs aren't formatted with Hypertext Markup Language.

The modules also let users access and share CD-ROMs over the network without changing disks. They are based on a 32-bit RISC processor and are fully scalable.

Pricing starts at $799 for Ethernet and $999 for Token Ring.

Axis StorPoint CD/T will be available by the middle of next month.

▶ *Axis Communications*
(617) 938-1188
www.axisinc.com

Racal-Datacom, Inc. has introduced three frame-relay access systems, FastFrame 200, FastFrame 300 and FastFrame 600.

According to the Sunrise, Fla., company, the systems offer routing, multiple methods of access and restoral and superior performance in handling legacy protocols and consolidation of diverse networks.

The 600 platform offers full T1/E1 frame-relay access, two network ports, four serial user ports and one LAN, either Ethernet or Token Ring.

Pricing starts at $995.

▶ *Racal-Datacom*
(514) 434-1517
www.racal.com/rdg

McAfee Network Security & Management has announced Secure-1, a desktop security suite to integrate antivirus protection and encryption.

According to the Santa Clara, Calif., company, Secure-1 includes the following three modules: NetCrypto, VirusScan and WebCrypto.

Pricing starts at $125 for one user.

▶ *McAfee Network Security & Management*
(408) 988-3832
www.mcafee.com

Multi-Tech Systems, Inc. has announced MultiModemManager, a rack-mounted system to remotely manage modems through Internet browsers and World Wide Web pages.

According to the Mounds View, Minn., company, MultiModemManager includes enhanced V.34 33.6K bit/sec. data performance and three/V.17 fax.

It was designed with Caller ID and flash memory.

Pricing for MultiModemManager starts at $15,000 for a customized eight-modem system with all the software.

▶ *Multi-Tech Systems*
(612) 785-3500
www.multitech.com

Blockade Systems Corp. has announced Blockade Enterprise Security Server and Blockade Distributed Authentication Services for central management of remote access servers in multiplatform environments.

According to the Toronto company, both products support Shiva Corp.'s LAN Rover, 3Com Corp.'s Access Builder, all Cisco Systems, Inc. products running IOS, IBM's 8235 Remote Access Server and IBM's LAN Distance.

The Security Server was designed to reduce the number of user-ID password combinations required to access corporate networks.

Pricing starts at $20,000.

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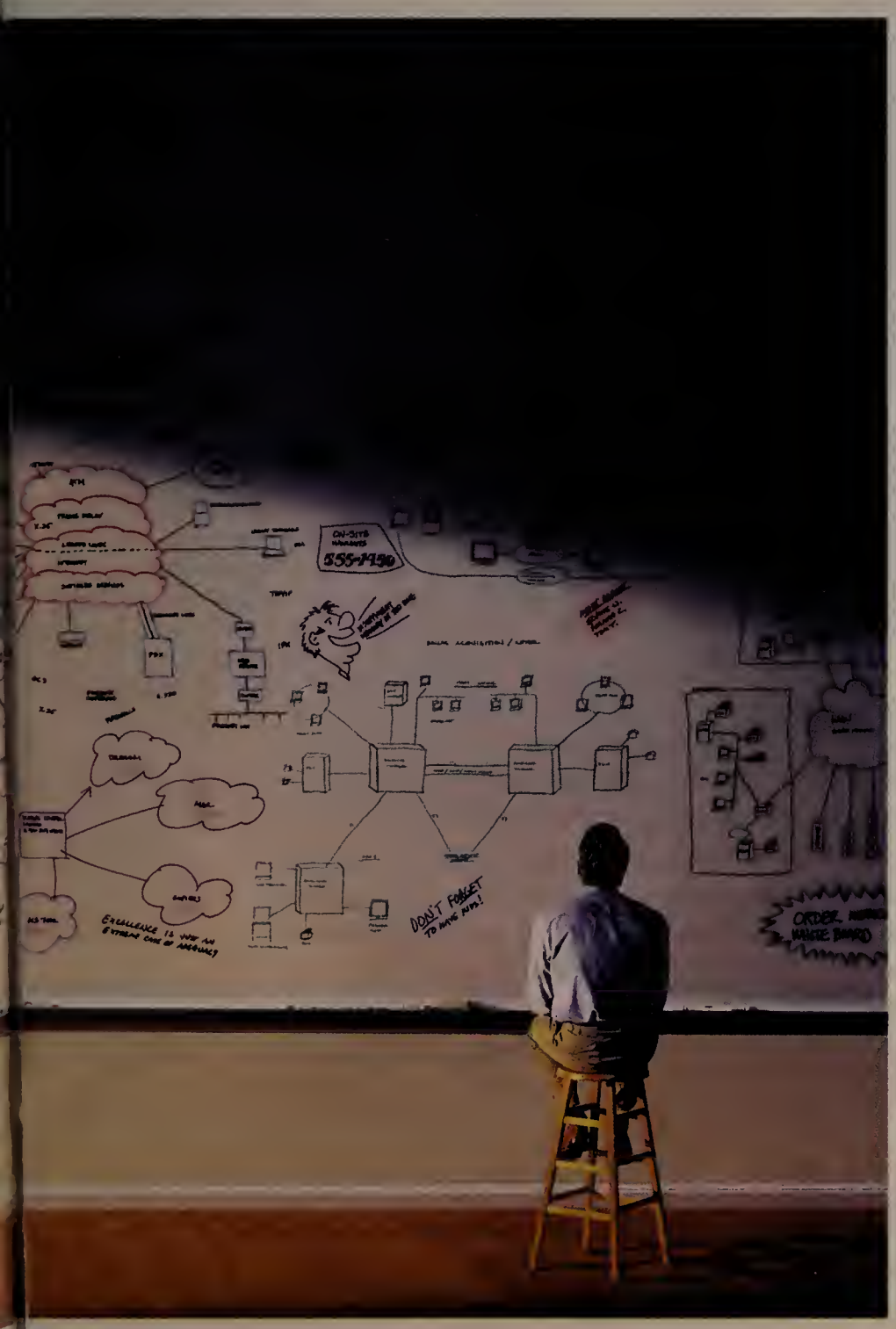

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Microsoft Internet Explorer 3.0 is cross-platform. It's here right now for users of Windows® 95 and Windows NT® operating system, and will soon be available for people who use Windows 3.1, or Macintosh®.

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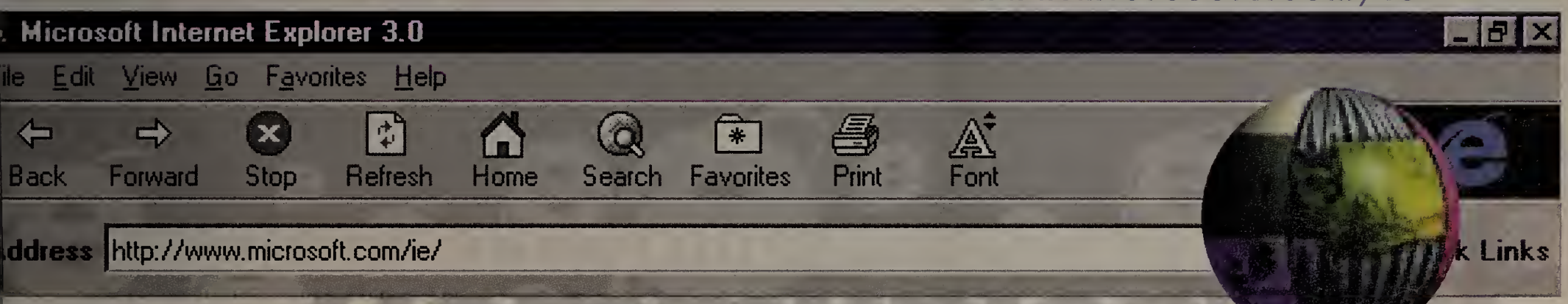

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Satellite links are set to blast off

Technology could bolster networks, connect remote areas

By Jon Skillings
SINGAPORE

Satellite technology is on the verge of becoming an alternative to terrestrial Internet connections for parts of the world that remain unwired.

Some satellite links will go into service within the next few months, but it will be several years before the technology offers more substance than promise, according to attendees at the Information Superhighway Summit held here recently.

Intelsat will offer access in parts of Africa later this year, in the Indian Ocean region by the middle of next year and in the Pacific Islands by the end of next year. Intelsat is an international commercial consortium that owns and operates a system of telecommunications satellites.

And the European Commission is getting ready to approve a satellite consortium that would be led by Motorola, Inc. (see related story at right).

Reaching out

A privately funded Japanese academic project, the Asia Internet Interconnect Initiative (AI3), expects to have its first international link, to Indonesia, up and running this month.

A link to Hong Kong is set for next month and a link to Thailand, for the fourth quarter.

Proponents say satellites can readily supplement terrestrial networks with broadband services — voice, video and data — and take those service to places where fiber-optic and other telecommunications lines don't yet reach.

In developed areas, satellites also can offer a "backbone patching" function, said Suguru Yamaguchi, an information science professor at the Nara Institute of Science and Technology in Japan.

Satellite links established in Japan at the beginning of this year — one year after the country lost a good deal of its Internet backbone capacity because of the earthquake at Kobe — now provide a backup telecommunications system.

Unlike Intelsat, the nonprofit AI3 project is still a test bed for the technology, Yamaguchi said.

"The construction cost is a major problem. At this point, this kind of business is not feasible on a commercial level," Yamaguchi said.

Skillings writes for the IDG News Service's Hong Kong bureau.

Europe set to OK Motorola-led group

By Elizabeth de Bony
BRUSSELS

The European Commission plans to approve Iridium, a 17-member satellite communications consortium led by Motorola, Inc., after it first hears comments from all interested parties, according to a recent notice in the European Union's Official Journal.

The six-page notice provides details of the agreements making up Iridium and allows a one-month period for comment.

Time-table

Iridium will provide personal digital wireless communications services on a worldwide basis using 66 low-orbit satellites. The satellites will be launched in the next 24 months. The entire system is scheduled to be functional in October 1998.

Iridium expects to be the first provider of global satellite-personal communications systems. Potential competitors Immarsat-P/ICO and Globalstar plan to be operational around 2000. Another consortium, Odyssey, is expected to be operational by 1999, according to the commission.

"One of the key elements of Iridium is that it will be global in nature so the nationalistic markets that now exist will be compromised," said Eric Owen, research manager for European telecommunications at International Data Corp.

Although a Global System for Mobile Communications device bought in the U.K. can be used across Europe, its use abroad will be more expensive than if used just nationally. This is due to the accounting among various operators, Owen explained. Iridium will eliminate that situation, he said.

The Iridium system will consist of a space segment, several gateways and handheld terminals. Gateways are switches that communicate with subscriber units and other satellites via the constellations and serve as the interface between Iridium and the public switched telephone networks.

De Bony writes for the IDG News Service's Brussels bureau.

Remote access, WAN links set

CONTINUED FROM PAGE 57

calendaring and electronic-mail applications to remote workers, while enabling them to update databases. "These are basic applications, but applying remote access to them cuts the time users need to spend in the office," Maaskant said.

At Networld/Interop, **Microcom, Inc.** in Norwood, Mass., will roll out the Microcom Access Integrator, a remote access system that is available as a seven- or 17-slot chassis.

The Integrator was developed with Cisco Systems, Inc. and 3Com Corp. and includes communications server and router functionality. That means it can be used with other products from the internetworking duo.

On the WAN front, the Microcom Access Integrator supports analog dial-up, Integrated Services Digital Network, X.25, frame relay and 1.54M bit/sec. T1 connections.

The Microcom system will ship next month with prices that range from $21,000 to $125,000.

Meanwhile, **Xylan Corp.** in Calabassas, Calif., recently announced that its low-end PizzaSwitch can be connected to frame-relay links.

Adding WAN support to a LAN switch means remote sites can be tied directly to corporate networks.

Xylan is providing free frame-relay software, along with two-, four- or eight-port serial modules, which cost $5,500, $7,000 and $9,500, respectively. The first model will ship next month.

Frame relay is 30% to 40% less expensive than low-speed private lines and is catching on quickly. It is already available throughout North America and is sweeping through Europe and the Far East.

"You'll see more LAN switch vendors follow suit as they begin selling switching to more than just headquarters locations," predicted Daniel Briere, president of TeleChoice, Inc., a consultancy in Verona, N.J. "And since companies typically don't have much, if any, technical staff at these smaller locations, providing easy WAN support is a big plus."

In other show news, **Ascend Communications, Inc.** in Alameda, Calif., will unveil a line of Internet protocol switches designed to solve network congestion problems that have long plagued Internet service providers.

NETWORLD+INTEROP 96

The GRF Series Model 400 was designed to offer greater performance than the conventional routers used widely in provider networks.

It can forward IP packets at up to 2.8 million packet/sec.; many existing routers forward at less than 1 million packet/sec.

The GRF 400 is available with a wide variety of WAN cards that support speeds of up to 622M bit/sec. The system is shipping now with a starting price of $15,650.

This time, do Rmon right

CONTINUED FROM PAGE 57

defined as Rmon 2, a next-generation version that promises to help administrators detect emerging application problems across their networks. That is, they can see the snake coiling instead of merely dodging a strike or reacting to a bite.

That's the way network wranglers would like to work. Their businesses rely on the smooth flow of information, and their users commit them to service-level agreements. With the expanded capability of Rmon 2 tools, it's possible to tame the snakes.

This time, the vendors are attempting to achieve some level of interoperability for their products. That means monitoring software from X might interact with Y's agents and Z's probes to track the busiest clients throughout a network by application type.

Administrators will be able to watch business-oriented usage no matter whose Rmon 2 tools are involved.

Hopeful signs will appear this week at Networld/Interop '96 in Atlanta, where vendors plan to demonstrate how Rmon 2 tools can work together.

Next week, they will test interoperability of their products according to specific Rmon 2 requirements at a three-day summit in California. Participants will include 3Com Corp., Bay Networks, Inc., Cisco Systems, Inc. and Frontier Software Development, Inc.

By year's end, these new and even more beneficial Rmon 2 monitors should coexist. Then administrators might not ignore the tools, use them only partially, or have to strive to make them work as promised — all of which dangerously distract them from watching those snaky networks.

Web-olution of networks

CONTINUED FROM PAGE 57

worldwide intranet for Turner Broadcasting System, Inc. can check the performance of his network connections, servers and vital applications such as electronic mail.

Intranets

"Now we're all on common ground. The support staff and our users have one place to get this information," said Charles Hebert, manager of software services support at Turner Broadcasting in Atlanta.

Central administrators leveled the playing field by creating TurnerView Health Monitor, a Web interface to the management tools they had integrated.

"Before, the E-mail support group waited for users to call them with problems. Now they're on top of situations involving their servers and everyone's network links," Hebert said. Users are more savvy now that they can see the complexity behind the scenes, he said. "Web reporting lets us drive the issue of service levels, since we developed a measurement tool before the need was forced on us," he said.

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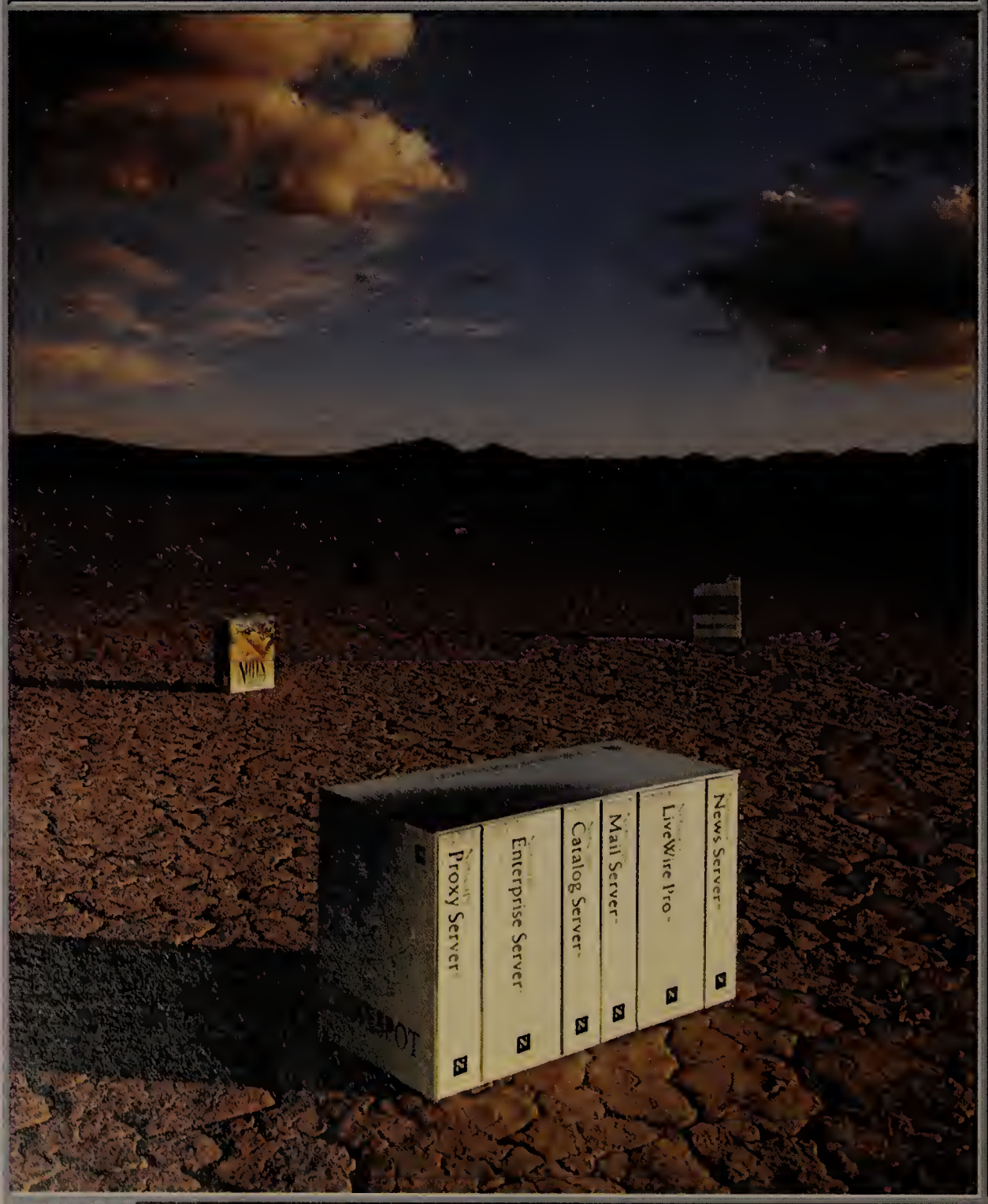

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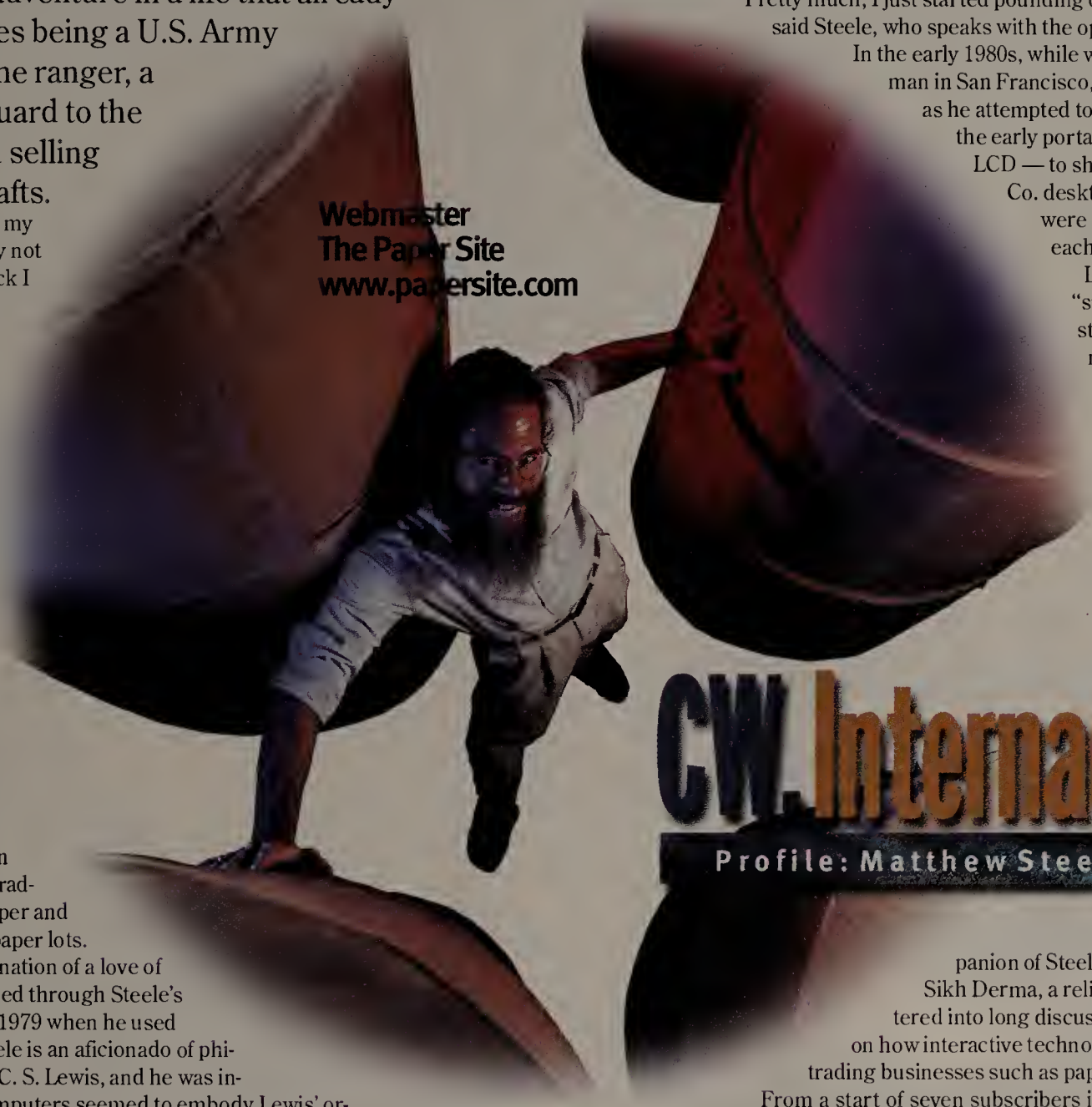
The Internet

Baby Bells put pressure on Internet service provider costs, **76**

Paper Site's Steele rolls with punches

By Mitch Wagner

For Matthew Steele, being a webmaster is just the latest adventure in a life that already includes being a U.S. Army airborne ranger, a bodyguard to the Dalai Lama and selling fine arts and crafts.



"Looking back over my past here, I'm honestly not quite sure how the heck I got to where I am today," Steele wrote in an electronic-mail message to *Computerworld*.

Steele is a systems developer at Presidio Paper, a San Francisco brokerage that trades paper in ton-lots to other brokers, who ultimately sell it to the nation's largest printers of books, magazines and other materials [CW, April 22]. He oversees The Paper Site, at www.papersite.com, an experiment in online trading where Presidio Paper and other printers bid on paper lots.

The job is the culmination of a love of computers that threaded through Steele's other jobs, starting in 1979 when he used them in the Army. Steele is an aficionado of philosopher and novelist C. S. Lewis, and he was intrigued by the way computers seemed to embody Lewis' orderly, logical philosophy.

Steele taught himself systems administration and programming from books and through experimentation.

"Pretty much, I just started pounding on keys and dinking around," said Steele, who speaks with the open accent of a California surfer.

In the early 1980s, while working as a broker and salesman in San Francisco, Steele discovered the Internet as he attempted to get a Radio Shack TRS-100 — the early portable computer with a four-line LCD — to share data with Hewlett-Packard Co. desktop systems. The two computers were incompatible, but they could each talk to servers on the Internet.

Later, Steele said, he worked as a "surf bum, [did] odd jobs, construction, bounced bars — not on my standard resume" — and worked as a security consultant.

The security firms at which he worked dealt with the physical sort of security rather than the computer kind, but they did have computers. And Steele said he "spent a reasonable amount of time 'uncrashing' badly networked PCs."

It was while he worked as a security consultant that he protected the Dalai Lama.

The Paper Site came about through Steele's friendship with Siri Vedya Singh, owner of Presidio Paper and a companion of Steele's in martial arts training and in Sikh Derma, a religious organization. The two entered into long discussions, beginning late last year, on how interactive technology could be used to enhance trading businesses such as paper brokerages.

From a start of seven subscribers in the spring, the Paper Site now has 20.

Steele, *page 72*

Beware freeware, managers say

By Kim S. Nash

Free World Wide Web servers scare IS.

Despite the obvious cost-savings of getting products from nonprofit organizations such as Apache or the National Center for Supercomputing Applications (NCSA), most information systems groups that are building intranets prefer to buy Web servers from commercial vendors.

Doubts about the quality — and even the existence — of technical support for freeware keep most IS managers away, according to a recent informal poll of more than 100 visitors to *Computerworld*'s Web site (www.computerworld.com).

But turning up its collective nose at freeware can be a costly snub for corporate America, some users and analysts said.

"Freeware is a life-saver for companies running an intranet on a tight or nonexistent budget," said Steve Whan, a webmaster at BC Hydro, a utility in Vancouver. Early this year, BC Hydro used several free Web servers to create a prototype intranet for project tracking and em-

Freeware, *page 72*

Help lines

While some companies have emerged to support freeware Web servers, most users rely on online sources, such as these:

Product	Support and documentation sources
Apache www.apache.org	www.ukweb.com/support/
CERN www.cern.ch/	www.cern.ch/
European Microsoft Windows NT Academic Centre emwac.edu.ac.uk/	To be put on mailing list, send E-mail to Webserver-nt-request@mailserve.process.com with "subscribe webserver-nt" in body
National Center for Supercomputing Applications www.ncsa.uiuc.edu	www.ncsa.uiuc.edu/indices/WebTech.Docs.html

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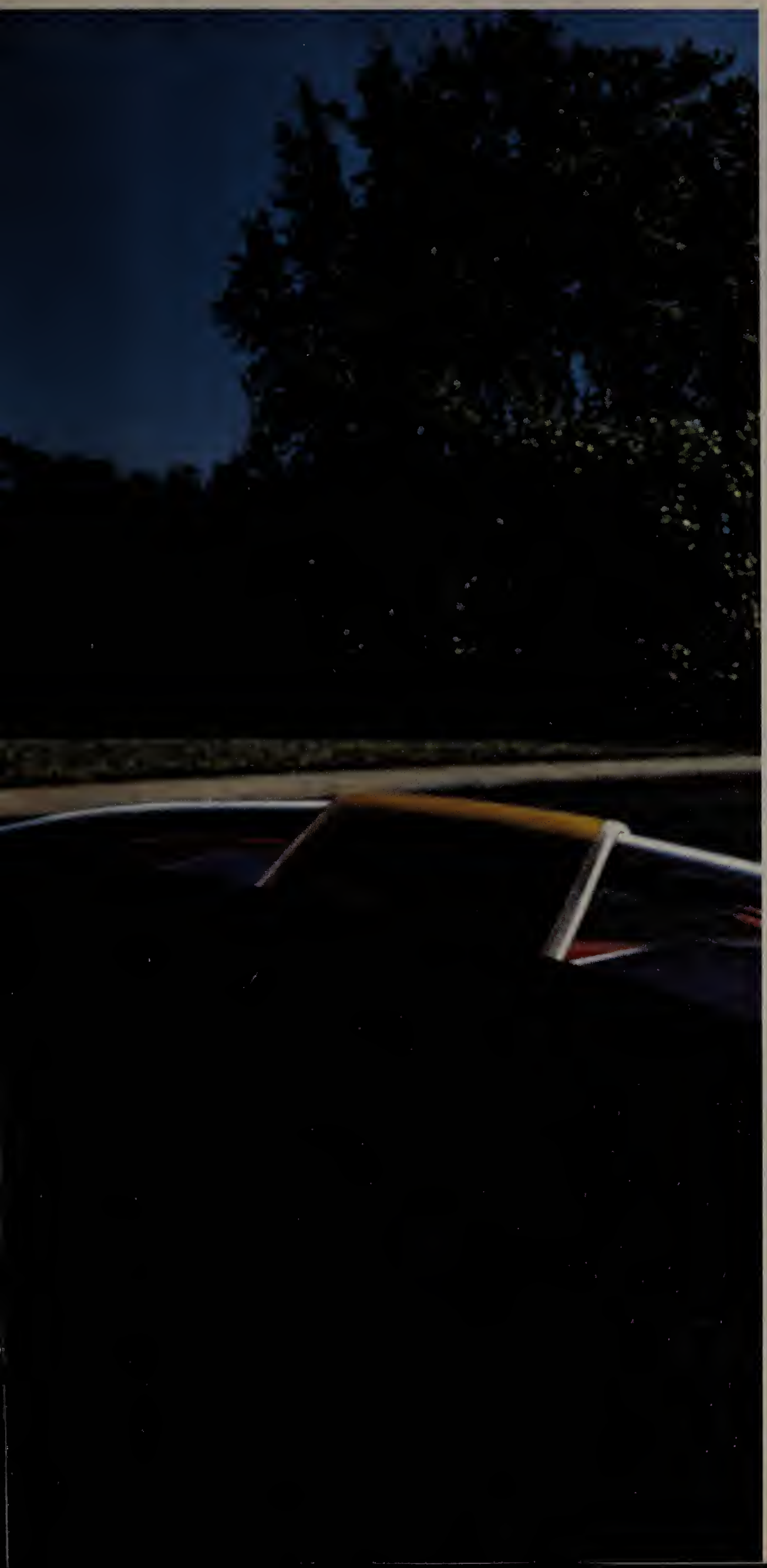

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IBM, banks revamp electronic services

By Thomas Hoffman
NEW YORK

IBM and 15 of North America's largest banks last week introduced Integrion Financial Network, a home banking service that they said will provide secure electronic commerce.

The potential market is more than 60 million banking customers by as early as mid-1997.

Integrion's services, which will initially include bill payments, balance inquiries and fund transfers to banks, don't go beyond the traditional home banking services offered today. However, Integrion's partners said the security standards they are developing with IBM will ease customer concerns about conducting transactions over the Internet and other electronic channels.

Some 500,000 to 600,000 of Royal Bank of Canada's customers want to conduct transactions on the Internet "right now," said John Cleghorn, chairman and CEO of the Montreal-based bank. Integrion's security "is essential to us. We want to hold on to these customers," he added.

Royal Bank of Canada's John Cleghorn: *Customers want Internet banking 'right now'*

IBM's Global Network will serve as a gateway for all Integrion transactions.

Louis V. Gerstner, chairman and CEO of IBM, said he wasn't sure when Integrion's security and electronic commerce standards will be published, but he said the standards will be open and available to all software and hardware vendors.

Each participant, including IBM, invested "several million" dollars in Integrion, said James Dixon, chief information officer at NationsBank Corp. in Charlotte, N.C. NationsBank and Banc One Corp. in Columbus, Ohio, will unveil pilots early next year.

Because Integrion's members represent more than half of the North American retail banking market, the network's critical mass will enable it to offer "the cheapest, easiest way" for customers to interact with banks, said John McCoy, chairman and CEO of Banc One.

Service prices haven't been set. Future services will include buying stocks or mutual funds online.

Integrion customers will be able to use a wide variety of front-end financial software, such as Intuit Corp.'s Quicken, Microsoft Corp.'s Money and Meca Software, Inc.'s Managing Your Money, as well as standard World Wide Web browsers. Access will be available to consumers via the Internet, online services such as Prodigy, America Online and CompuServe, the IBM Global Network and through TouchTone telephones.

Analysts see the venture as an effort by IBM and member banks to wrest control of electronic banking away from software rivals such as Microsoft and Intuit. But after Integrion begins processing millions of electronic transactions, the vendors in greatest jeopardy include electronic transaction processing pioneers CheckFree Corp. and Visa Interactive, said Phoebe Simpson, an analyst at Jupiter Communications LLC, a market research firm in New York.

Outside looking in

Some of North America's largest banks noticeably absent from the Integrion Financial Network include Chase Manhattan Corp. and Citicorp, both based in New York. A spokeswoman for Chase said it wasn't clear "how much more secure" Integrion's electronic banking offering would be compared with other Internet services.

Other Integrion outsiders, including Wells Fargo Bank in San Francisco, have already entered into similar ventures. Wells Fargo and 20 other banks joined America Online's AOL Banking Center (keyword: bank), an online banking service that the Dulles, Va.-based commercial online service began offering its 6 million customers earlier this month.

Because Citicorp and Wells Fargo "have already established their own paths" in online banking, neither institution "probably saw much point" in joining Integrion, said Bob Landry, a technology analyst at The Tower Group, a banking and technology consultancy in Wellesley, Mass.

— Thomas Hoffman

Freeware

CONTINUED FROM PAGE 69

ployee manuals.

Pfizer, Inc. and Raychem Corp. also prototyped intranets with free Web servers but switched to Netscape Communications Corp. products when they put the projects into production.

That is partly because commercial products are technology's security blanket, said Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston. "IS knows how to buy products and may have relationships with certain vendors. It feels good to them," Sloane said. "Freeware is a foreign idea to many IS departments."

Also, many of the latest features don't show up in freeware until months after they appear in commercial products. And some freeware servers aren't meant to compete with their commercial brethren, including the World Wide Web Consortium's product, said Tim Berners-Lee, director of the Cambridge, Mass.-based consortium and founder of the Web.

Rather, the consortium's product, HTTPd, was designed to show people what they can do with Web technology, Berners-Lee said. "It will demonstrate a set of new features but totally lack some normally accepted features," he said.

Free and commercial Web servers

Server	Number of sites*	Percent share
Apache	149,535	37.64%
NCSA	63,436	15.97%
Microsoft IIS	26,739	6.73%
Netscape Communications Server	25,859	6.51%
Netscape Commerce Server	25,138	6.33%
CERN	21,786	5.48%
O'Reilly WebSite	10,485	2.64%
Other	74,303	18.7%
Total	397,281	——

*Public Web sites polled during August. Doesn't measure intranet use.

Source: www.netcraft.co.uk

Freeware proponents claim that with the original authors of the products just an electronic-mail message away, users can't ask for better, more knowledgeable technical support. And freeware users often form a community. A plea sent to a Usenet newsgroup will prompt a detailed response within hours from someone who has already walked that mile, Sloane said.

Still, users are staying away from freeware because of concerns about whether they will get help when they need it — or be able to lay blame when applicable.

"I don't know if a lot of IS guys have really embraced the notion that other users can be as good or better at answering technical questions as some guy with a phone and a database" of questions and answers, said a webmaster at a large Kentucky company.

New Products

Etak, Inc. has introduced a suite of Internet mapping products and services for World Wide Web site developers.

According to the Menlo Park, Calif., company, the products include E-Map View, E-Map Route and E-Map Locate. They also allow map publishers to generate maps from their own individual servers.

The services include EZ-Map, a subscription-based service for providing geographic locating features to a Web site, and EZ-Locate, a geocoding service.

Pricing begins at $1,000 for one Internet mapping product.

▶ *Etak*
(415) 328-3825
www.etak.com

Nombas, Inc. has introduced ScriptEase WebServer Edition, a scripting tool that has an integrated development environment and remote debugger.

According to the Medford, Mass., company, the product implements ScriptEase language into a Common Gateway Interface, Internet Server Application Programming Interface or Netscape Application Programming Interface language for World Wide Web pages and forms processing on any Hypertext Transport Protocol server platform.

The product was designed to protect users against stack crashes and memory-overwriting bugs.

Pricing for ScriptEase WebServer Edition begins at $145.

▶ *Nombas*
(617) 391-6595
www.nombas.com

Steele rolls with punches

CONTINUED FROM PAGE 69

"It's been slow getting started, but it's hard to get together a trading community on the Internet," Steele said. Nonetheless, he said he remains optimistic and hopes to see aggressive growth through 1997.

Plans are in the works to expand The Paper Site to include industrial paper — cups, plates, napkins and cleaning supplies — and connectivity to The Paper Site in systems sold by systems integrators that serve the paper industry. The goal: 800 customers by the end of next year.

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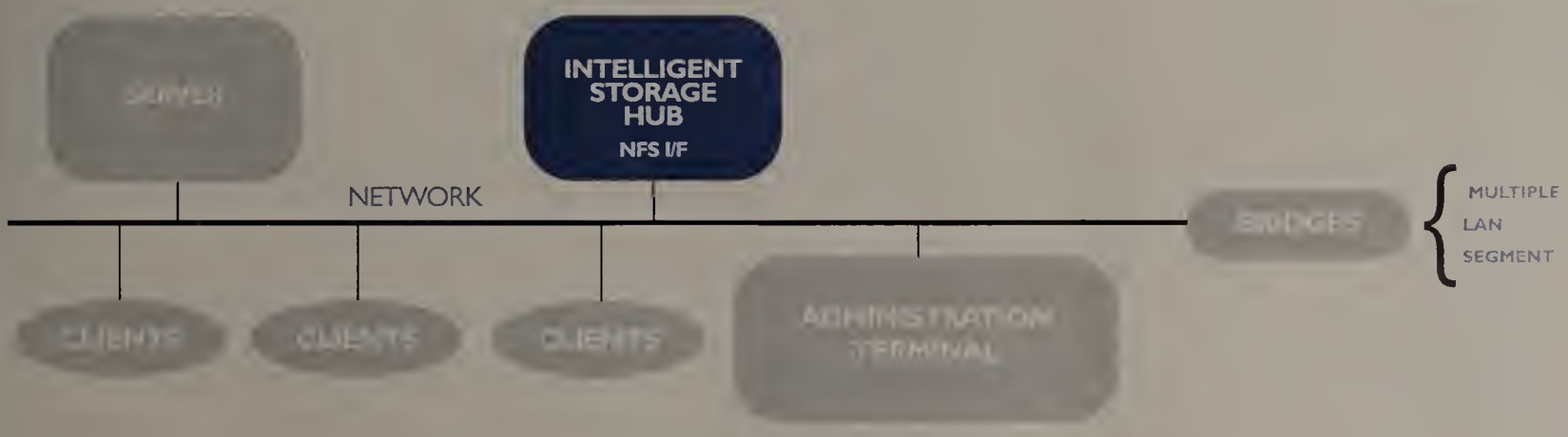

The MetaStor intelligent storage hub attaches directly to your network, increasing data throughput by up to 50 percent.

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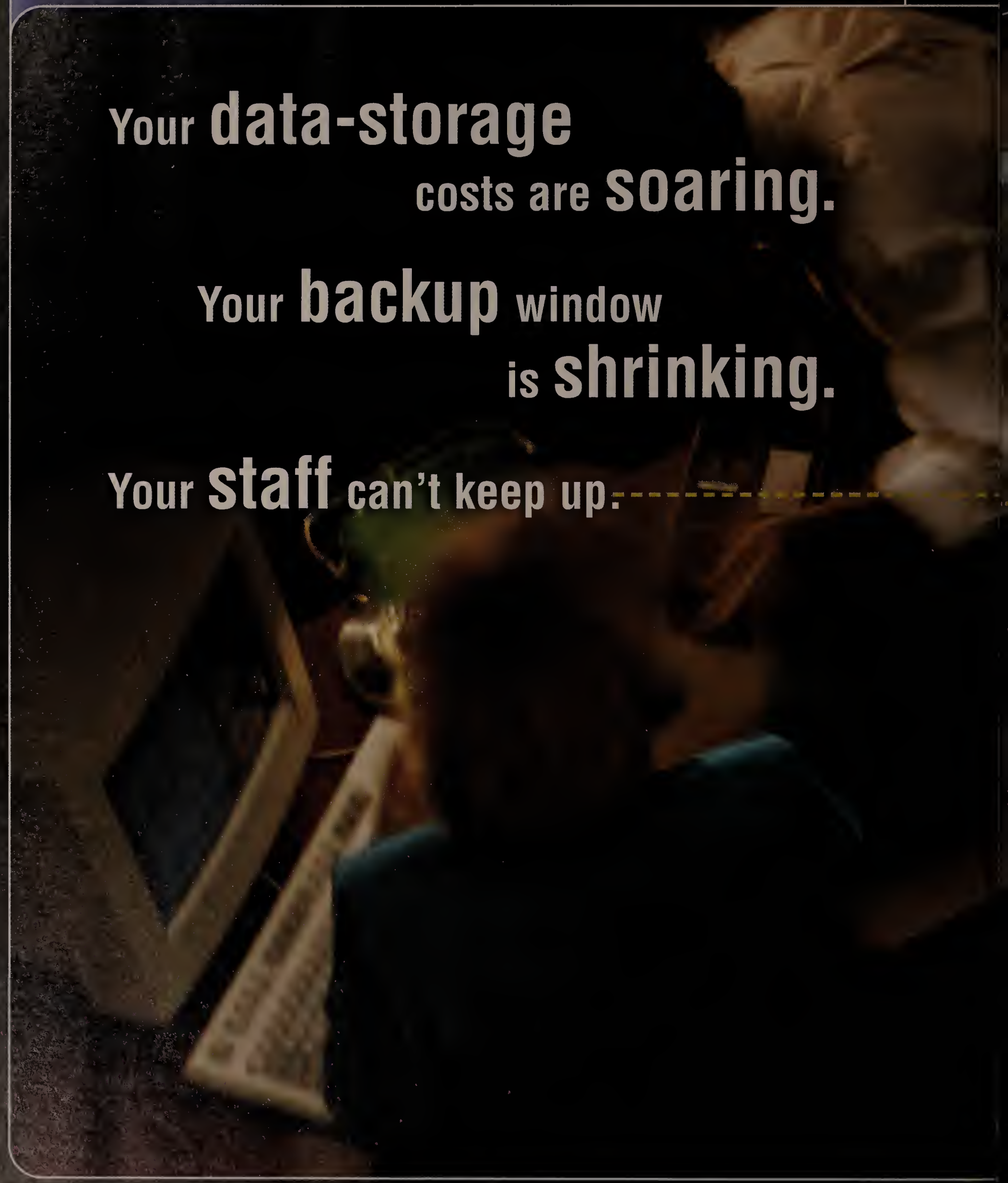

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Baby Bells put pressure on 'net provider costs

By Kim Girard

The Baby Bells have stepped up their battle to make Internet service providers pay more for telephone lines, arguing that their users overtax the phone network and have been subsidized for too long.

The Federal Communications Commission created subsidies in 1993 to spur growth of electronic services over phone lines, including online access. To provide access, an Internet service provider leases a line from a carrier at an average flat rate of $30 per month and pays nothing for usage because all traffic is incoming from subscribers.

Now, Bell Atlantic Corp., Pacific Bell, Nynex Corp. and US West, Inc. have asked the FCC to change subsidies that let service providers pay a fraction of what a long-distance company pays to get a phone line. The FCC will review the matter as it revamps phone rates to prepare for local phone competition.

Regional Bell operating companies' (RBOC) complaints are backed by a recent spate of surveys and studies filed online. The RBOCs say Internet calls, which can last hours, use more phone system capacity than voice traffic for which phone networks were designed. Bell Atlantic, in a recent report, cited an increase in dial-tone delay and service complaints due to taxed switching capacity.

Subsidy advocates contend that any rate hike would be passed down to business and residential consumers by service providers that could weather the increase and stay in business. They said the RBOCs are whining because they want to avoid expensive switch upgrades.

"I would argue the impact [the service providers have on the telephone system] is next to nil," said Tony Rutkowski, former executive director at the Internet Society. He is now vice president of Internet business development at General Magic in Sunnyvale, Calif.

'net stats

- Voice calls tie up a phone line for three minutes, on average
- The average Internet call is 20 minutes
- The number of Internet subscribers is expected to grow 60% this year from 16 million to 26 million users
- The nation's seven regional Bell operating companies would each have to spend an average of $35 million a year for several years to upgrade their infrastructures

Source: Bellcore, Morristown, N.J.

On the line

Bellcore says Internet service providers pay about $.002 per minute for use of a phone line, about 12% of what long-distance companies pay.

Busy signals

But Dave Boast, a division director at UUnet Technologies, Inc., a major backbone supplier and Internet service provider, said Internet traffic is taking its toll on the phone companies. Extended use of dial-up phone lines through central office switches can result in busy signals or lost dial tones at peak hours, he said.

"I think it will get worse," he said. "Some systems out there are bending. If they don't do anything about it, they'll break."

Tom Nolle, president of CIMI Group, a consultancy in Voorhees, N.J., argued that the service provider subsidy that enables cheap, unlimited access to the Internet should be eliminated altogether.

"[The Internet] is not a societal right — it's a business," Nolle said.

But a flat-rate and unlimited usage is what made the Internet succeed and become a tool for technological and networking advancement, others countered.

"[The RBOC] mind-set that every minute costs money conflicts with what made the Internet possible — unlimited access," said Nate Zelnick, an analyst at Mecklermedia in Westport, Conn.

Nolle and others agreed that one answer for the RBOCs is to remove data from the public switched network by implementing new high-bandwidth technologies, such as Asymmetric Digital Subscriber Line. Those services let the phone company connect customers remotely via a modem bank and router in the central office instead of via a switch.

Briefs

Linking mainframe to Web

Attachmate Corp. in Bellevue, Wash., recently unveiled Emissary Host Publishing System 2.0, a middleware system that lets any World Wide Web browser access IBM mainframe and AS/400 applications. The system converts screens on-the-fly between host applications and Hypertext Markup Language. It will ship by the end of the month and cost $25,000 per server.

Shopping Network sells software

The Internet Shopping Network (ISN) has begun selling 900 downloadable software titles on its Web site. The wares include Web development tools, software utilities, as well as consumer items such as games. The ISN Downloadable Software site competes with other software sales site on the Internet, including CNET, Inc.'s shareware.com site at www.shareware.com and CyberSource Corp.'s software.net site at www.software.net. ISN, at www.isn.com, is a subsidiary of the Home Shopping Network.

Centura Java converter

Centura Software Corp. in Menlo Park, Calif., said it will include the ability to generate Java applets in its forthcoming Centura Web Developer tool set. Centura, which demonstrated the product's capabilities at the Windows NT Intranet Solutions trade show in San Francisco, said developers will be able to convert existing SQLWindows and Centura Developer applications to Java and partition them into applets and server-based Java applications. Pricing hasn't been announced for the tool set, which is slated to ship by the end of the year.

New commerce server

Best Internet Communications, Inc. in Mountain View, Calif., has launched an electronic commerce service that combines a Commerce Server from **Netscape Communications Corp.** with payment-processing services from **CyberCash, Inc.** Best enters a competitive field for Internet site hosting. However, the Best service is cutting-edge in that it offers payment processing as part of the package rather than require users to seek arrangements for processing credit-card information received online. The service costs $250 per month, with a $500 start-up fee.

Java libraries for Latte

Borland International, Inc. in Scotts Valley, Calif., will license a set of Java class libraries from **ObjectSpace, Inc.** in Dallas. Borland will include the ObjectSpace Java Generic Library with Latte, the visual development tool set the company plans to ship later this year for **Sun Microsystems, Inc.**'s Java. Java is an Internet development language. The ObjectSpace Java library includes a set of data structures and algorithms for use with the language.

AT&T to link Web, call centers

AT&T Corp. plans to launch in October a trial service that links Web pages with sales and customer-support call centers. Visitors to participating sites will be able to click on a button marked "call me." Seconds later, they will receive a phone call from a customer-service representative or salesperson at the company whose Web site they visited. AT&T won't be first with the technology; Edify Corp. introduced similarly enabled software earlier this year [CW, March 11].

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Corporate Strategies

City blazes own IS trail

High tech creates windfall for Scottsdale, Ariz.

By Gary H. Anthes
SCOTTSDALE, ARIZ.

One might expect a city where bears and mountain goats roam free, trash collectors carry business cards and citizens voted 2-1 last year to increase taxes to have an unusual information systems culture.

"We have a history of saying, 'We don't have to do it the way the other guy does it,'" said Scottsdale City Manager Richard A. Bowers. "We think the private sector has a lot to learn from us."

That pioneering attitude is paying off, people inside and outside the city say. Scottsdale has married a homegrown geographical information system (GIS), one of the most advanced anywhere, to a fiber-optic Asynchronous Transfer Mode (ATM) network. This makes Scottsdale the first city to use fiber-optic ATM. The GIS is lowering costs, improving service to the public and improving management decision-making, according to city workers from the mayor to clerks to police officers.

Consistent innovators

Earlier this year, the city used its GIS to prove that federal census figures undercounted Scottsdale's population by some 9,000 people. A subsequent correction will result in a $9 million windfall — twice the amount invested in the GIS — in added federal payments over the next five years, according to Scottsdale Mayor Sam Kathryn Campana.

"They consistently show up as innovators in IS," said Cindy Kahan, vice president for enterprise programs at Washington-based Public Technology, Inc., a nonprofit research group that represents city and county governments. "We've seen them come back with a number of cutting-edge applications."

Scottsdale's *Richard Bowers, city manager; Sam Kathryn Campana, mayor; and Greg Larson, chief information officer, say geographical information systems have been key in improving municipal services*

The city will spend $9 million on IS this year out of a total budget of $700 million.

Most city governments, if they have a GIS at all, use it for niche applications such as map-making. But Scottsdale has positioned its GIS — really a suite of "map-enabled business applications" — at the center of its IS infrastructure. Virtually everything the city does — including zoning, code enforcement, emergency response, work management, water management, flood control, building permits and inspections — is sup-

Trailblazing, *page 85*

Essential data arrives through the Grapevine

By Tim Ouellette

For a group of Chrysler Corp. engineers in the complex business of automobile manufacturing, simplicity is the key.

The Detroit company, one of the largest users of Lotus Development Corp.'s Notes groupware, needed a way to simplify user access and add value to its slate of Notes databases. Chrysler wanted to keep its engineers updated about an ever-growing engineering knowledge book housed in one Notes database.

Chrysler turned to Grapevine for Notes, software that builds on Notes' basic communication capabilities to prune data to users' tastes and deliver it to their doorsteps.

Lotus Notes

Collaborative chaos

Analysts say the point of groupware is to get users to collaborate on projects and contribute to the various databases that contain a company's corporate knowledge. But once users start doing this — especially in large installations — firms find that the databases become overloaded, are hard to navigate and ultimately bust productivity.

"We didn't want the engineers to have to go to the database themselves," said a supervisor in Chrysler's technical computer center who requested anonymity. "We needed a mechanism to let

Grapevine, *page 85*

Prospero a perfect fit for denim maker

By Tim Ouellette

Cone Mills, Inc. wanted a sales tracking system as durable as the denim it manufactures every day.

For Kyle Routh, a programmer/analyst at the Greensboro, N.C., firm, that meant quickly getting the data salespeople entered into Microsoft Corp.'s Access database into a tracking application housed in Lotus Development Corp.'s Notes groupware environment.

Salespeople had been entering the same data twice into the different applications. That left room for error, took time away from their other duties and didn't supply other corporate groups — credit, traffic and international sales — with timely data.

After taking a look at its options, Cone Mills tried Prospero from Oberon Software, Inc. Most of the other systems required custom coding, were expensive and would get the job in once-a-day batch processes only.

Instead, Prospero lets users visually link database fields in two different desktop applications without any coding. Then a Prospero button appears in Access, for example, which lets the user automatically update the corresponding Notes database right away.

"It definitely helped us speedwise," Routh said. Previously, workers had to re-key 40 to 50 complete orders a day. "Now sales can spend more time with the customers," he added.

The ability to continue work with off-the-shelf software was important to Cone Mills, which runs 89 plants across the country and is competing in the low-margin textile industry.

Additionally, Prospero didn't require an expensive Notes consul-

Cone Mills, *page 85*

Cone Mills Corp.
Greensboro, N.C.

Business: Denim supplier for companies including Levi Strauss

Notes installation: 23 users in 3 departments

Problem: Double entry or extra programming needed to transfer data from Microsoft's Access to Notes

Solution: Oberon's Prospero software – moves fields to Notes database by hitting one button on the Access screen

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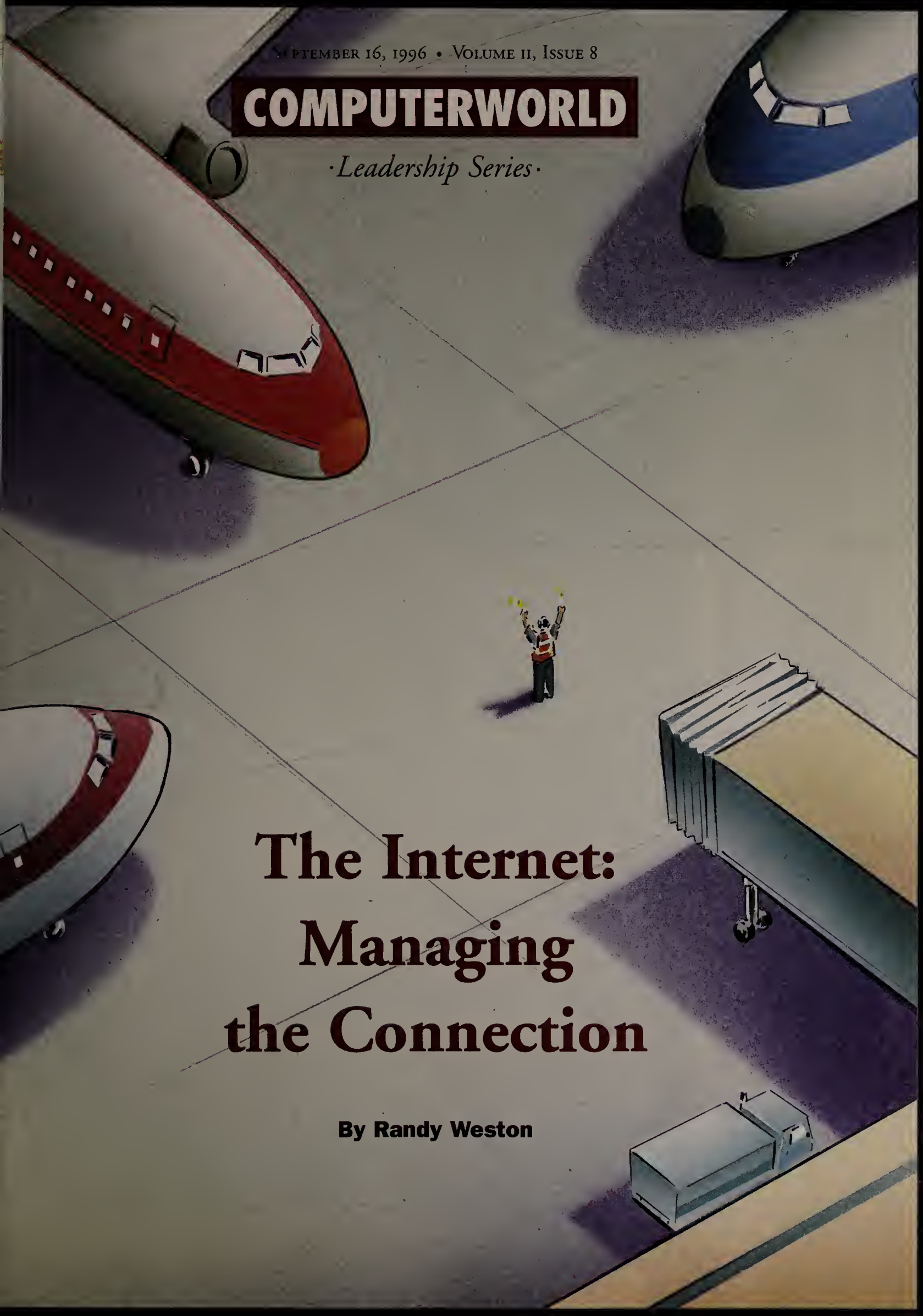
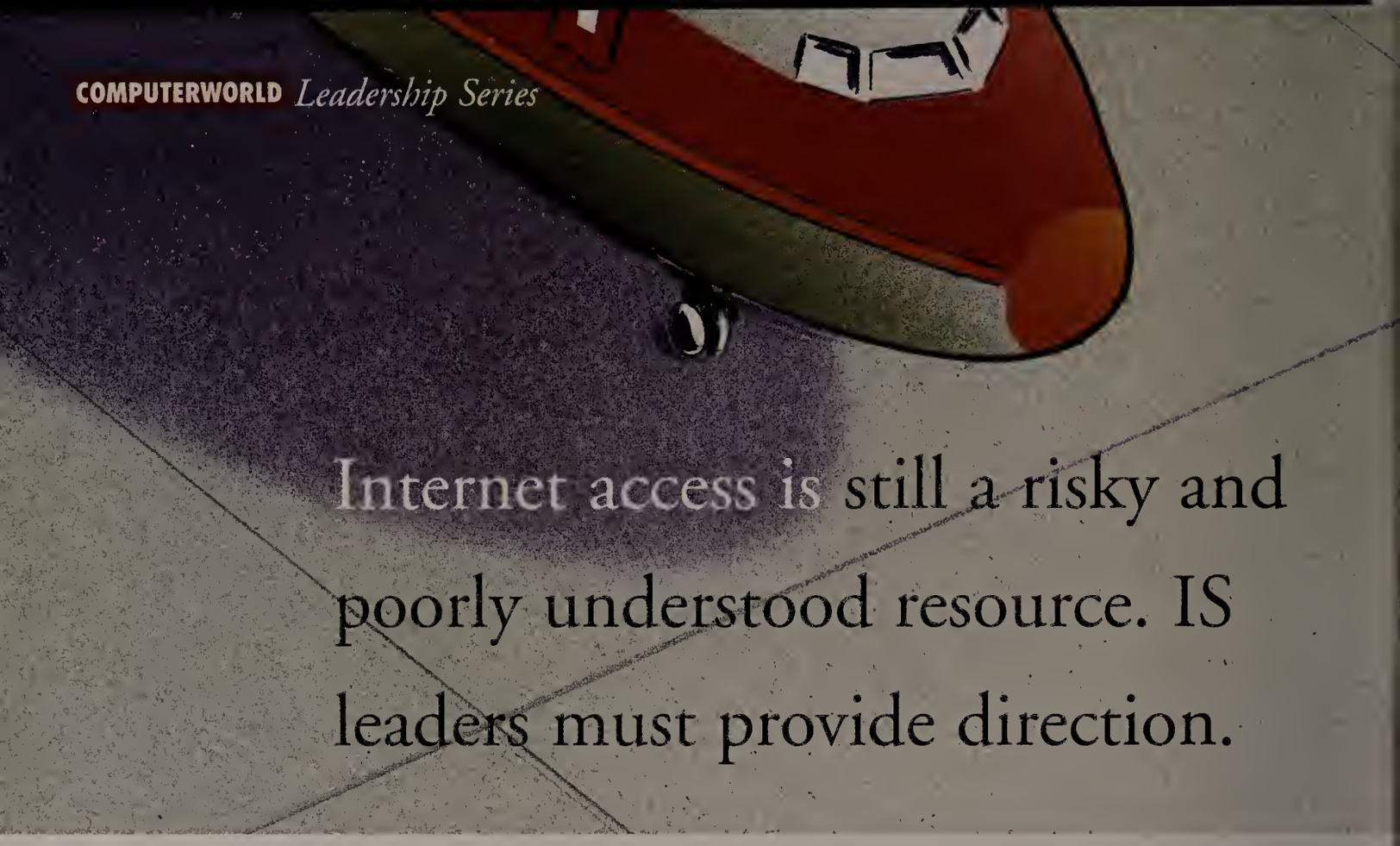


The Internet: Managing the Connection

By Randy Weston



Internet access is still a risky and poorly understood resource. IS leaders must provide direction.

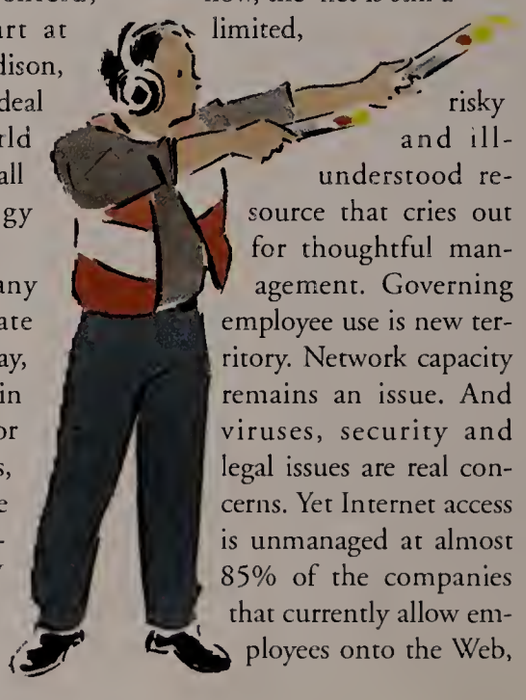
Employees at Sony Pictures Entertainment in Culver City, Calif., better give CIO Steve Heckler a good reason for wanting to surf the Internet. "If someone has a burning desire to explore the Internet, they can do it at home," Heckler says. "If they have a legitimate business need, then we will support them."

But Mark Blumenfeld, Heckler's counterpart at Promega Corp. in Madison, Wis., says it's no big deal to open up the World Wide Web to almost all of the biotechnology firm's staff.

"They can buy any book with a corporate credit card, but someday, they'll have to explain why. The same goes for their desktop." Besides, "my users have more powerful and sexier applications on their TV sets than I can give them at work, so what am I concerned about?" Blumenfeld says.

Heckler and Blumenfeld are among the IS executives around the country who are grappling with how to manage employee use of the Internet and World Wide Web.

Everyone agrees Internet use eventually will be as widespread as that of PCs. But for now, the 'net is still a limited, risky and ill-understood resource that cries out for thoughtful management. Governing employee use is new territory. Network capacity remains an issue. And viruses, security and legal issues are real concerns. Yet Internet access is unmanaged at almost 85% of the companies that currently allow employees onto the Web, according to Ullas Naik, vice president of technology research at First Albany Corp., an investment firm in Boston.



The problem results not from a lack of concern, but from the Internet's rapid infiltration of the marketplace, he says. "Some marketing guy in a company needed it to check on the competition, so he signed himself up and expensed the cost. He tells a finance guy about it, and he signs up. Soon, things go haywire. It's only in the past three to four months that you've seen a concerted effort by IS departments to rein it in," Naik says.

Most managers are still winging it and coming to different conclusions. Nevertheless, some common management guidelines are emerging.

"I'm not going to let Joe Schmo download some virus onto the system and bring us to our knees."

Stan Johnson, Worldport LA

NETWORK OVERLOAD

The question of providing Internet access to the masses is irrelevant if your network can't

handle the load, analysts say.

Rick Villars, a network analyst at International Data Corp. in Framingham, Mass., says that unless IS managers can "convince themselves they have built a ready-for-prime-time network and have the staff to support it, they should restrict access."

Internet technology can overrun a system, as many network managers are finding out with such devices as PointCast, an Internet-based screen saver. This software, from PointCast, Inc. in Cupertino, Calif., feeds continuously updated news items to a user's PC.

When the corporate network of AlliedSignal Aerospace in Torrance, Calif., began to slow down, CIO Paul Hoedeman shut off PointCast and other noncritical Internet and network applications to boost the network's capacity. "We have about 4,000 or 5,000 people accessing the external Internet," Hoedeman says. "Things that were not business-related we had to shut off."

Network consultant Jeff Kaplan at International Network Services, Inc.'s Quincy, Mass., office recommends that system managers evaluate their networks before turning on anyone's Internet access. "You need to make sure you can scale the network to what level of [Internet] access the organization permits," Kaplan says.

Companies may need to invest in high-speed backbones, new local-area networks, remote access equipment and network security and manage-

Case study: Federal Express Corp.

Federal Express Corp. spent years developing a system for delivering packages overnight. It's taking nearly as much planning to deliver Internet access to the company's 122,000 employees.

"We wanted to make [Internet access] available to employees, but we wanted to know the risks going in," says Tom Buss, senior manager of enterprise data protection at the company's Memphis headquarters.

Currently, only 5,000 FedEx employees have E-mail, and 4,500 of those have complete Internet access for such uses as doing marketing research, tracking the competition and communicating with business partners.

But market forces are quickly pushing the company to hook up every PC in the company to the 'net.

"Eventually, employees will need at least Internet mail capabilities," Buss says. "Our customers are driving that. They want to be able to communicate with their FedEx contact person via the Internet."

Because recent court cases have shown E-mail to be a legally binding form of communication, the company put into place a written policy to ensure it is protected if the FedEx name is associated with an employee's online antics.

"An employee comment off the cuff could make the company liable," Buss says. "There's a separate bullet under the policy that says everything is coming from the corporation and communications must be appropriate. We also put a banner on all outbound mail that says, 'The opinions expressed are not necessarily those of Federal Express.' "

Buss also wants to protect the integrity of FedEx's complex computer network and to make sure any licensing agreements are not being violated. So the policy is specific about how employees can download files from the Web.

"The policy requires that any software downloaded must be checked with the corporate-standard virus checker," Buss says. "For those on Unix machines, the source code must be available, and the file must be downloaded to the FedEx network and reviewed before being compiled. And it must be compiled on the FedEx system."

Employees' department heads are responsible for policy enforcement. But Buss says his office also keeps an eye on Internet activity within the company.

"We don't want to do a Big Brother approach where we monitor what people are doing from a central level," he says. "But we do conduct regular checks for policy violations, and if we find something, we bring it to the local manager's attention so they can deal with the issue."

"We wanted to make [Internet access] available to employees, but we wanted to know the risks going in."

Tom Buss, Federal Express Corp.

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> ***"My users have more powerful and sexier applications on their TV sets than I can give them at work, so what am I concerned about?"***
>
> *Mark Blumenfeld, Promega Corp.*

ment tools, Kaplan says. They will also likely need to train support staff and possibly hire people to manage the system. However, analysts say generalizing about expansion costs is nearly impossible because each company's needs vary.

"If people are just checking E-mail, you don't need a lot of bandwidth," says Joel Maloff, president of Dexter, Mich.-based The Maloff Co., a corporate Internet consultancy. "If people are browsing the 'net for research, you're getting into a greater need for capacity. And if you have an engineering group looking for and downloading software, then you're jumping up to a lot more bandwidth."

Maloff's advice to clients is to monitor Internet traffic randomly for 15-minute periods during the course of a week at the link between your LAN and the pipe to an Internet service provider.

"If those links exceed 50% to 60% during key 15-minute periods, I consider the link saturated," Maloff says.

Only 120 of Sony Pictures' 3,000 employees are hooked up to the Internet because of bandwidth concerns. Network capacity is needed to move massive amounts of data for computer-generated special effects and other applications.

"Of our 120 executives using it now, including myself, we barely have time to get on," Heckler says. "When we do, it's at the end of or late in the day, so we're not competing with other network applications.

"Our philosophy is we are just going to expand to the business needs," Heckler says.

DON'T GO THERE

Analysts say CIOs shouldn't lose sleep worrying that employees will surf the day away if they are given unlimited Internet access.

According to a recent study of 100 workplace Internet users by Forrester Research, Inc. in Cambridge, Mass., most "wired" employees spend less than 20% of their time online surfing for personal matters. Employees are three times more likely to surf the Web at home.

"It reminds me of the conversations we had at a very large bank I worked at years ago," Promega's Blumenfeld says. "The question then was whether everyone should have a telephone or not. The managers said, 'If you give low-level people a telephone, they'll talk to friends and family all day.' . . . It's the same issue about employees abusing the Internet. If they are, they're not getting their work done and must be dealt with accordingly."

Internet access checklist

Management:

✔ Define who has responsibility for granting Internet access, managing its use and enforcing the rules.

✔ Write conduct standards and policies on Internet use and educate employees. It's the best way to head off harassment suits, libel issues and other legal problems.

Network capacity:

✔ Do a baseline assessment of your network capacity. Assess your network's current performance level. You should also evaluate the network demands and performance expectations of your current applications.

✔ Put into place a method for measuring the impact of Internet access once it's rolled out. The impact on the network and the additional usage will change from what was initially estimated.

✔ Provide proper training to your IS staff. Be sure they are capable of providing Internet support.

Politics:

✔ Get key executives to buy in to your Internet plan. You will need them to champion your plan as costs go up and as you invest in upgrades or infrastructure improvements.

✔ Before you plan, reach a consensus with line management on how much Internet access should be allowed.

✔ Make sure non-IS department heads know of your plan. Their budgets likely will have to support the network expansion needed to handle the increased load.

Perhaps more worrisome than employees wasting time on the 'net is what sites they visit and what they download or post while there.

Ronald Boeving, vice president of IS at HealthCare Compare Corp. in Downers Grove, Ill., restricts Internet access partly because one employee has already abused privileges.

"We had one individual in information systems who decided to do battle with someone on the 'net: a vendor he had a problem with," Boeving says. "The problem was [the HealthCare Compare employee] identified himself with the corporate 800 number, and his E-mail address identified the company."

Boeving and two other executives decide who receives access and for how long. Of the company's 1,700 employees, about 50 have Internet access.

COVER YOUR ACCESS

To protect your company from any legal fallout from such occurrences, draft a policy of acceptable Internet conduct, recommends Bob Chatham, leadership strategy analyst at Forrester Research.

"Handle this like any other [human resource] policy," he says. "Have a written policy ready up front about what applications are allowed. Cover yourself by getting it all down on paper." Include specifics in such areas as damaging statements made on a Web site, copyright infringements and getting source code when downloading software from the Internet. "You can deal with any problems after that on a case-by-case basis," he says.

Policies are needed not only for legal issues; they also can go a long way toward protecting the internal network.

Worldport LA in San Pedro, Calif., has offices around the world that coordinate cargo ships' trips to the Southern California port. The company's CIO, Stan Johnson, wants to make sure his network is secure from any dangers that lurk on the Internet.

"I do not bring the Internet to our wide-area network," Johnson says. "I'm not going to let Joe Schmo download some virus onto the system and bring us to our knees."

Johnson's solution: Each floor has Internet-linked PCs that are not hooked up to the internal network. Users who need to download files must go through his department and a string of safeguards meant to protect the network.

"If you're willing to get off your duff and walk 20 feet, you can have all the Internet access you need," he says. "We have not had one problem in a year. It may not be the most efficient [solution], but it is effective."

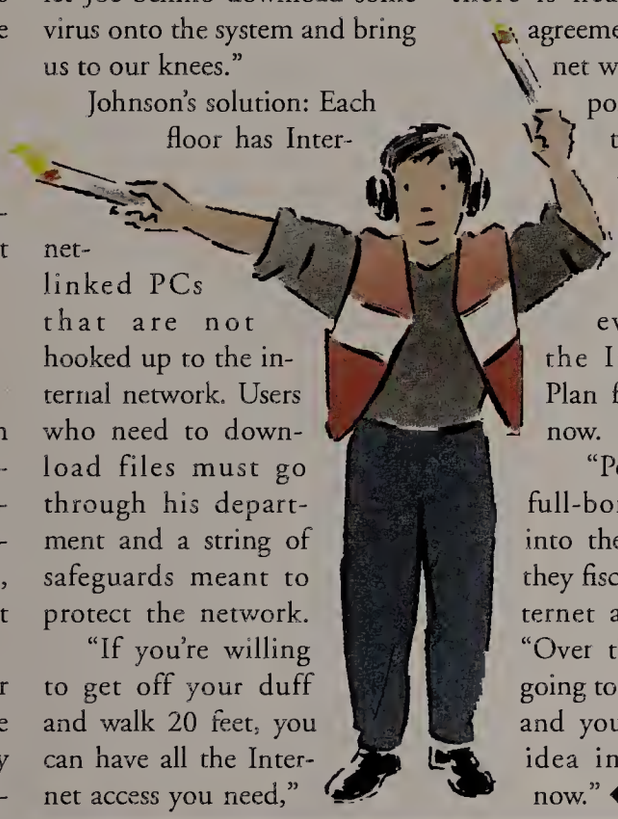
NO CIO IS AN ISLAND

Because Internet access involves relatively new technology, IS managers most likely will find themselves out in front on the issue. But because providing access requires an interdepartmental effort, the usual rules about gaining support and assistance from non-IS managers and users apply.

Despite the different steps IS managers have taken so far, there is nearly unanimous agreement that the Internet will become as important a tool as the telephone or PC — and as widespread.

Chatham's suggestion to everyone facing the Internet boom: Plan for expanded use now.

"People should go full-bore, down as far into the organization as they fiscally can, with Internet access," he says. "Over time, everyone is going to have Web access, and you can build that idea into your policy now." ◆



"Have a written [Internet access] policy ready up front about what applications are allowed."

Bob Chatham, Forrester Research, Inc.

About the Author:

Randy Weston, a *Computerworld* staff writer, covers Internet technology and its use in corporations. He also reports on networking for *Computerworld*'s online service, @Computerworld. He can be reached via E-mail at randy_weston@cw.com.

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Pictured: the HP NetServer 5/100 LH. Awards shown: *PC Magazine* Editors' Choice HP NetServer 5/133 LH, *PC Computing* BEST HP NetServer 5/133 LS2; *LAN Magazine* Products of the Year HP NetServer LS Series; *Network Computing* Editor Refuses to Give it Back Award HP NetServer 5/100 LS4, *PC Computing* MVP HP NetServer 5/100 LH, *Computer Reseller News* Channel Champion Award NetServer Series. The Intel Inside logo and Pentium are registered trademarks of Intel Corp. ©1996 Hewlett-Packard Company PNG433

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City deploys $2M ATM net

Earlier this year, Scottsdale, Ariz., turned on a $2 million fiber-optic Asynchronous Transfer Mode (ATM) network to connect 16 government buildings in two city campuses at 155M bit./sec. The network is used for data and voice applications and for bandwidth-hungry imaging applications to support firefighting and flood control.

ATM technology is especially well-suited for the establishment of flexible "virtual LANs" that link various sets of users anywhere in the city, said Bradley Hartig, Scottsdale's strategic planning and support manager. That could allow, for example, the isolation of a set of users with confidential information. It could also allow optimized network performance by grouping users with similar needs, Hartig said.

The driving force behind the ATM network is the city's GIS, the hub of the city's computer applications. "Visualization using the GIS needed the ATM infrastructure to work," said Greg Larson, Scottsdale's CIO.

The GIS database, at 100G bytes and growing rapidly, will be used by about 1,200 people at dozens of locations around the city. Thousands of automobile trips annually will be saved by the ATM network, Larson said.

— Gary H. Anthes

IS trailblazing pays off for Ariz. city

CONTINUED FROM PAGE 81

ported by the GIS.

"Geographical information is the common denominator," said Greg E. Larson, the city's chief information officer. GIS data supports activities in each of the city's three core areas: resource management, land use and public safety. And the GIS is the foundation of the city's data warehousing and executive information system architectures, Larson said.

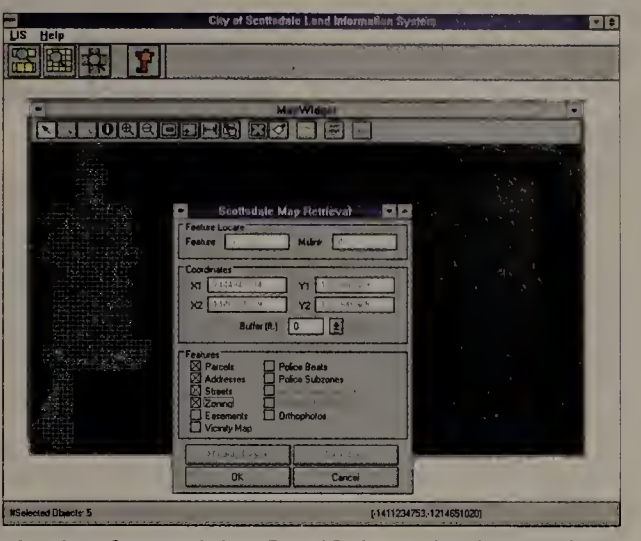
Processing shortcuts

Karen Hatton, a secretary who helps process 15,000 code enforcement complaints per year, said the GIS and related systems have reduced the time required to research and write up a complaint by 60% to 80%.

Previously, she had to go through several paper files just to find the name and address of a property's owner, then fill out a paper complaint sheet and route that to an inspector. That entire process now takes a few keystrokes, she said.

The GIS is used extensively to evaluate the impacts of alternate development strategies in this fast-growing city in the Sonoran Desert. "Of all our systems, the biggest long-term payoff is from our GIS because the city is only one-third built," Bowers said.

Scottsdale, which covers 32 miles from north to south, is bigger than Detroit but has just 175,000 residents.



The city of Scottsdale's *Land Information System gives administrators more accurate data about zoning, development and open spaces in the region*

The mayor, who taps in to the GIS from a terminal in her office, said City Council members use the GIS at meetings to better understand issues that are before it, including citizen disputes. "It's magic," Campana said. "All I can see is bigger and better applications over time."

The citizens of Scottsdale are politically conservative yet environmentally conscious, Larson said. "The GIS helps balance economic development and environmentalism. It's possible to have that win-win if you have the data to support it," he said.

Indeed, data accuracy is a hallmark of the Scottsdale GIS.

One way the city ensures that accuracy: Six people on bicycles fitted with Global Positioning System navigation gear roam the streets pinpointing the exact location of storm drains and the like.

Most GISs are mainframe-centric and built on proprietary technology.

But Scottsdale's GIS uses a client/server model. And its developers said it is the first to be built using nonproprietary GIS "widgets."

The widgets, created by the city, can be reused in Microsoft Corp. Visual Basic applications.

The advantage of that approach is the city can easily build on its GIS foundation without the restrictions and costs inherent in proprietary systems.

Infrared tracking technology douses trouble in Scottsdale

Lightning struck a palo verde tree in a remote area of Scottsdale, Ariz., at dusk on July 7 last year. About 23,000 acres burned in the largest urban-wildland fire in the state's history.

But thanks to the city's unique Advanced Technology Program (ATP), the fire was brought under control in three days — a day earlier than expected — at a cost savings of $250,000.

Flights over the fire area by NASA, which partially funds the city's ATP, relayed infrared images to firefighters. That allowed firefighters to track the location, intensity and spread of the fire with unprecedented accuracy.

What is a city government doing with what amounts to an information systems research and development unit?

"We believe technology needs to play a much better role in bringing down the price of services to the community," said Wilson W. Orr, director of the ATP.

He estimated that the ATP's 47 remote-sensing applications will save the city about $9 million per year in a program whose total annual budget is just $1.5 million.

For example, Orr said images from NASA aircraft, spacecraft and satellites — combined with the city's GIS and predictive modeling — will save the city $25,000 annually in landfill monitoring; $200,000 in zoning code enforcement; $1.3 million in GIS data capture; and $5 million per year in fire and flood control.

"Their advanced technology unit is a seed bed for finding cutting-edge applications for technology and looking at how to apply them to city problems," said Cindy Kahan, vice president for enterprise programs at Public Technology, Inc.

For NASA, the ATP contract is just one small part of several programs that deal with issues such as global climate change.

But for Orr, it's all about the longevity of the local community. "Global change is starting to hit home," Orr said. "For us, opportunities to use technology are becoming obligations to use technology."

— Gary H. Anthes

Cone Mills calls on Prospero

CONTINUED FROM PAGE 81

tant to work on the project.

"It is very basic stuff, but it does what we need it to do," Routh said.

Cone Mills still uses Notes 3.1, the precursor to Notes 4.0.

But because Prospero works fine with 3.1 and the Notes tracking application is also performing well, Routh doesn't anticipate a quick move to 4.0.

Prospero lets users visually link database fields in two different desktop applications without any coding.

Users do data entry in Access rather than in Notes for ease of use and more flexibility in presenting the data.

Prospero has added links to other applications. Those include links to Adobe Systems, Inc.'s Acrobat, Lotus' Organizer and Microsoft's Schedule+ and Exchange Server.

Grapevine

CONTINUED FROM PAGE 81

the engineers know that there is something in the database to look at."

Grapevine first requires that users create their own interest profile. Grapevine then tracks multiple Notes databases, finds entries related to a user's interests and notifies the user via an electronic-mail message. The relevant document will show up as a hypertext link in the message.

Only about 20 engineers are taking part in a pilot at Chrysler, but that number will reach the thousands by the start of next year, company officials said. And Chrysler isn't alone. National Semiconductor Corp. expects almost 8,000 users to participate in its Grapevine system.

Unique approach

Filtering technology is slowly making a dent in the slew of E-mail that users must manage these days, but there has been little focus on the same problem in groupware databases.

That is why observers say Grapevine for Notes, developed by Grapevine Technologies Ltd. in Troy, Mich. (www.gvt.com), is unique in making groupware easy to use.

But there is still more to be done, observers said — especially by adding software agent technology to the data-entry process for the Notes databases.

"Grapevine still relies a lot on the human component," said Deb Furey, an analyst at Collaborative Strategies, a consultancy in San Francisco. "Data has to be captured correctly in the Notes database in the first place, then you can use Grapevine to escalate the information to other users."

A version of Grapevine for Microsoft Corp.'s Exchange Server is also in development.

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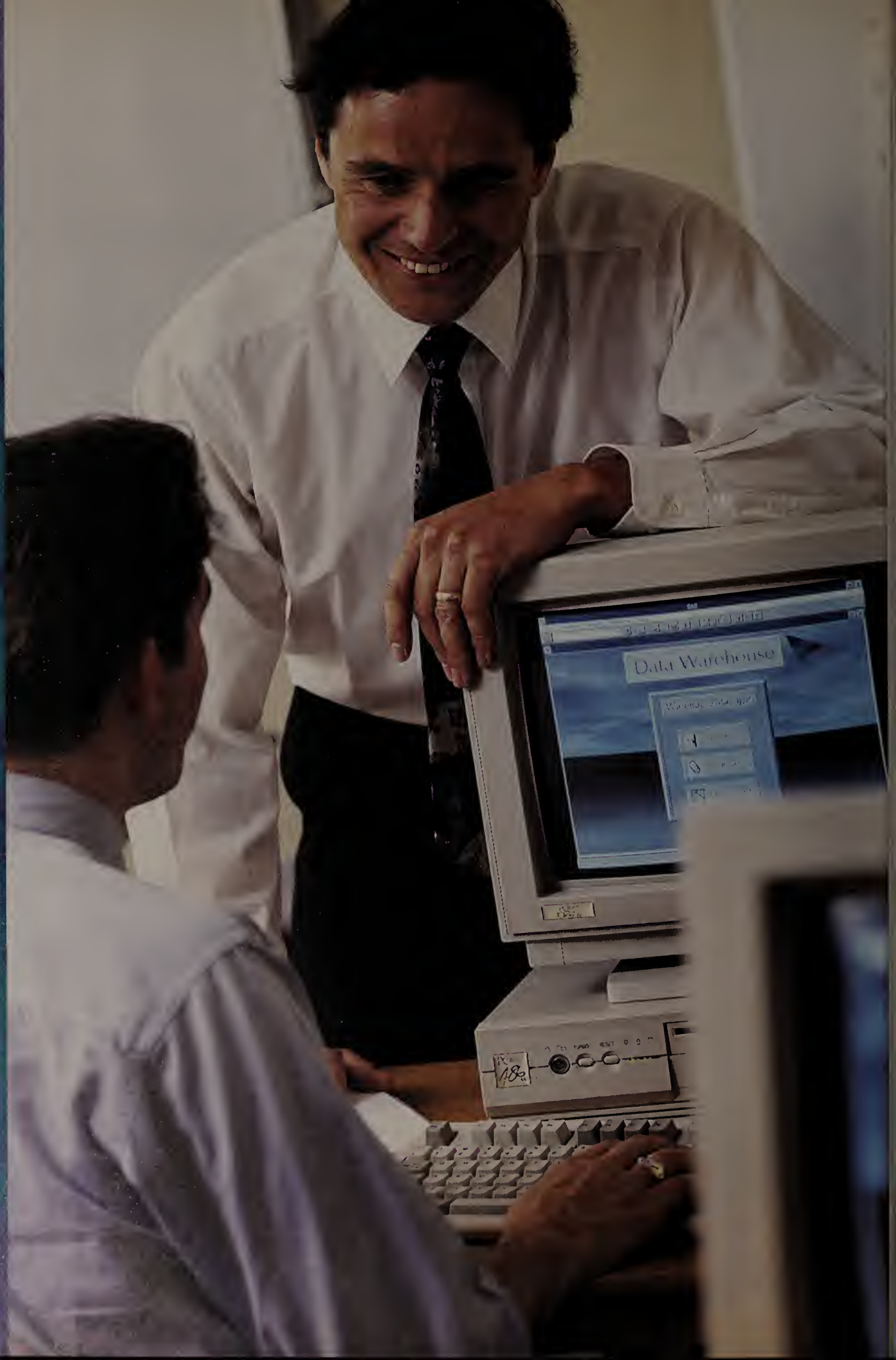

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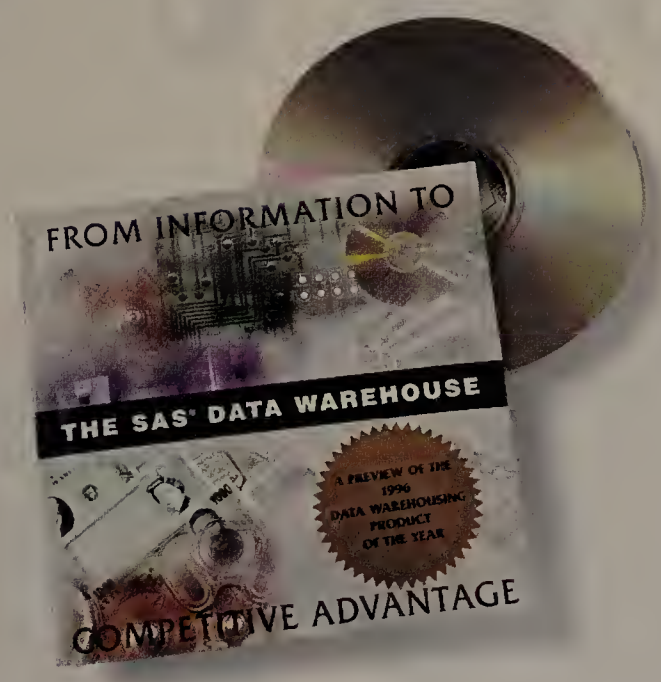

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Managing

Career Isn't Over

Computerworld survey: Revolving door turns faster for other top executives than CIOs

By Alan R. Earls

PHILIP ANDERSON

If you're a chief information officer, you can relax a little. According to a recent *Computerworld* survey, the conventional wisdom that CIOs suffer from an exceptionally high turnover rate is obsolete.

The average tenure of CIOs at the 100 companies surveyed is 6.6 years — longer than the commonly believed average of 18 to 36 months.

But perhaps even more significant were results from *Computerworld*'s comparison of CIOs with other top executives at the same companies.

The results from this reality check are startling. Today's CIOs actually outlast most other top executives. Vice presidents of sales, for instance, stayed at their posts an average of just 5.6 years, while vice presidents of marketing or human resources held their jobs for even less time. Only CEOs were found to outlast CIOs, by a little more than a year and a half.

The results of the *Computerworld* survey, conducted in July, are similar to those of a recent Deloitte & Touche study of CIOs, which pegs the annual turnover rate at 17%. That would mean that roughly one in every six CIO jobs turns over each year. A *1994 Computerworld Premier 100* survey said CIOs held their jobs an average of 6.1 years, six months less than the findings in the July study.

Other sources, however, still hold that CIO tenure is shorter. Paul Strassmann, a *Computerworld* columnist, cited a turnover rate of 24.2% in his column June 10. This is an average tenure of 30 months, which he determined based on mailing lists of CIOs from 1994 and 1995.

Many pundits have portrayed CIOs as a

shell-shocked bunch, walking a career path on the verge of a nervous breakdown. While the CIO mantle, like other executive positions, contains considerable risk, CIOs and recruiters say that description isn't true.

When "every entity in the organization still depends on IS," it can be hard to be all things to all people, says Ingvar Petursson, vice president of worldwide chapter relations for the Society for Information Management and CIO of King County Medical Blue Shield in Seattle. But with others in the management suite becoming increasingly information systems-savvy, some of the stress on CIOs is beginning to dissipate, he adds.

John J. Davis, president of John J. Davis & Associates, an executive recruitment firm in New York, suggests that if CIOs are beginning to outlast others in the management suite, it may be due to recognition by top management that they play key roles in a very complex job. "The investment in technology is so critical and the relationship is so intense [between the CIO and the company] that people think twice about replacing the leadership," he says.

Michael Simmons has held successive CIO positions at Bank of Boston, Bank of America and Fidelity Investment Co. He is now CIO at The Security Capital Group, a Texas holding company. Not all those transitions have been smooth, he admits. CIOs must be change agents if they are doing their jobs right. That, he says, means they will always be on the firing line and at risk.

But Simmons says turnover in the past may have been exacerbated by the fact that too many CIOs were simply "DP managers in search of a fancy title." He says CIOs now have more business savvy and better corporate survival skills.

Recruiters see improvements

Paul McCartney, manager of the advanced technology practice at Korn Ferry International, Inc., an executive recruitment firm in Dallas, agrees that times are improving for CIOs.

"Several years ago, we saw very high levels of turnover among CIOs. It was not uncommon to see movement every 18 months to two years," he says.

McCartney credits growing management sophistication and market forces for the change. "Now you no longer have CEOs assuming that the grass is greener on the other side of the fence. They don't just reach for a new CIO when there is a problem," he says. As CIOs began to be more critical to corporate success in the volatile early 1990s, McCartney says there was a virtual bidding war for talent. Now the market has become more stable.

Davis says his firm's database of CIOs continues to show higher levels of turnover than those reported by Deloitte & Touche or *Computerworld*, but he agrees that CIOs' fortunes are improving. "The role is evolving, and CIOs seem to be acquiring a better fix on management issues," he says.

This comes at a time when IS staffs are becoming more disillusioned with IS management (see *Computerworld*'s Annual Job Satisfaction Survey, May 27).

Mark Cook, a director of computer services at The Catholic University of America in Washington, blames CIO turnover on the same factors that bedevil IS: too many tasks and too few resources. IS staffs have grown cynical, he says, because "CIOs spend the majority of their time kowtowing to management requests rather than just saying no. Nothing is ever a problem because some poor techie will perform the impossible."

But Frank Erbrick, CIO and senior vice president at United Parcel Service, Inc. in Atlanta, defends his peers.

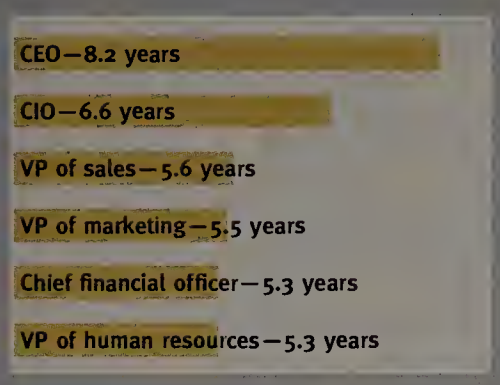
People who aren't part of the profession need to take a more objective view of CIOs and turnover problems, he says. "After all, it can't be that all the CIOs are dumb and all the [chief financial officers] are smart," he says. ■

Log on to an online discussion on our World Wide Web site this week (www.computerworld.com) about turnover among top executives.

Earls is a freelance writer in Franklin, Mass.

Staying Power

***Computerworld* asked officials at 100 corporations the following question: How long has the current _____ held his position?**



Notes on the 100 firms surveyed:

- 76 had annual revenue in 1995 of at least $1 billion; nine had revenue of $500 million to $999.9 million; eight earned $250 million to $499.9 million; and six had revenue of up to $249.9 million.
- 27 had 500 or more IS employees; 21 had 200 to 499 staffers; eight employed 101 to 199; 12 had 51 to 100 staffers; and 18 had 50 or fewer IS employees.
- 42 were manufacturers; 12 were retailers or wholesalers; 19 were in the financial, banking, insurance of real estate sector; 10 were in transportation/utilities; and 17 were from other industries.

Commentary

M. Lewis Temares

Consultants: Get the facts

One CIO's spin on turnover

Our careers aren't over, consultants. Actually, our careers are in overdrive.

Some management consultants have found an easy path to get a contract: Tell the CEO or chief financial officer that the chief information officer function is transitory and outsourcing is the solution. Further, some CIOs are scared into using consultants because, after all, their half-life is less than two years.

Here's a true story: A consultant told a senior vice president that his CIO doesn't understand the company's business. In addition, he's a has-been because industry turnover is 30 months, and he's been around for more than a decade. The only solution? The senior vice president should reorganize IS, spend millions on systems and get his own CIO. Luckily, it didn't happen, because the executive didn't get scared into a decision. He went out and got the facts.

As a statistician, I realize the data presented in this *Computerworld* survey can't be statistically projected to the entire business community. But when was the last time you saw data refuting the "CIO is dead" syndrome? As Mark Twain would say, the CIO's death has been greatly exaggerated.

The fear mongers don't say why people change jobs. It could be for a better opportunity or retirement, as well as downsizing, mergers or terminations. But that holds true for consultants, too. What's the turnover rate for consultants? How many use their engagement as an entry into a corporate CIO job?

What about vice presidents of human resources, sales and marketing and CFOs? Do they realize their careers may be over unless they change? Who regularly looks at the turnover rate for non-IS executives?

Are consultants valuable? Yes. But they must become partners, not fear mongers. They must be managed, not given free reign. A good consultant works with, not against, the organization and is on temporary duty to the company. As a CIO, my role has changed over the 16 years I've worked at the University of Miami. I've gone from the sage on a stage to a guide from the side. Do consultants understand that this change in operation has taken place for most CIOs?

Consultants, wake up. You must communicate, integrate and operate as a partner. If you accuse and abuse, we all lose. We can't have a partnership if you begin a relationship by attacking, threatening or intimidating. And by all means, before any relationship begins, get the facts. ■

Temares is vice president of information technology, CIO and dean of the College of Engineering at the University of Miami.

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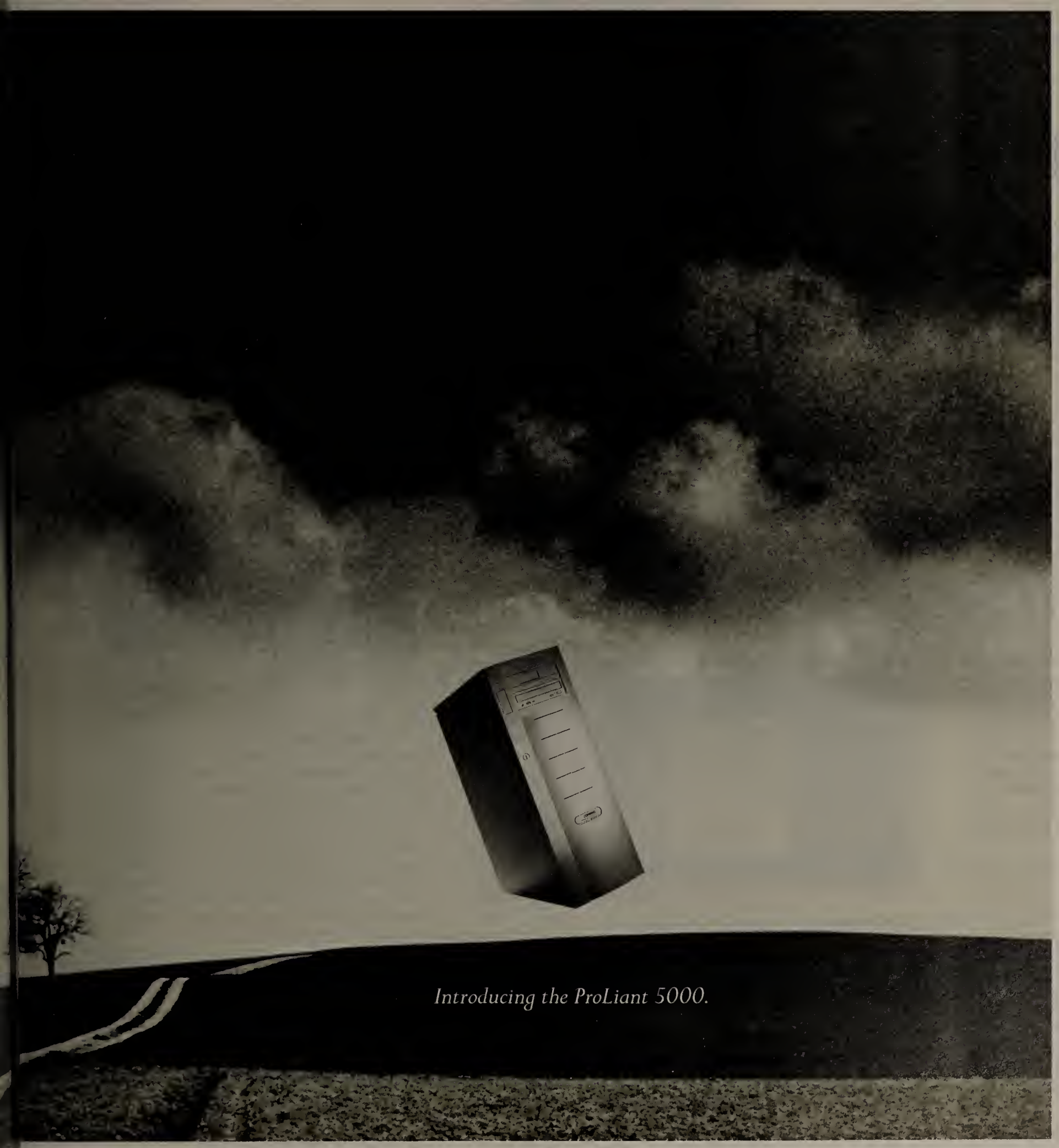


COMPAQ

Has It Changed Your Life Yet?

Power tools

Elegant tools for internal billing

By Jeffrey Gordon Angus

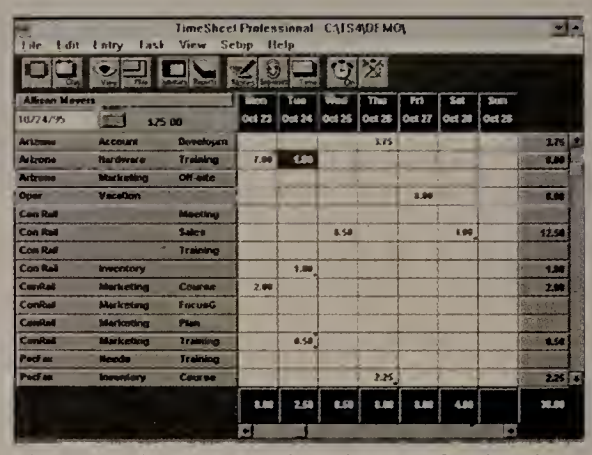
IS groups that charge back to internal departments are often encumbered by their record-keeping requirements. Time and project tracking systems are usually a black hole of complex form-filling and calculations.

But two general-purpose time-tracking and billing packages — TimeSheet Professional 4.0 for Windows by Timeslips Corp. and Time & Profit 1.2 by BytePro Corp. — can help information systems organizations save time.

These billing systems are inexpensive and connect to other programs, such as accounting and project management software. They are more logical and easier to use than most of the behemoth overhead generators I've seen IS departments use for internal billing.

And there's another use for these programs. In the past, I've been able to use these systems as a low-effort way for employees and workgroups to track project times by task. They can do this far more easily than if they used a full-blown work-breakdown structure (WBS) system. If you need full WBS accounting, a time-and-project tracker won't do. But for those sites that need the maximum amount of information for the least effort, this category is well worth looking at.

TimeSheet Professional 4.0 for Windows
Overall grade: B+
Price: $199.95 single user, $699.95 network
Timeslips Corp.
Dallas
(214) 248-9232



The network version of **TimeSheet Professional 4.0 for Windows** makes it easy to consolidate staffers' time sheets

TimeSheet Professional is part of the suite of time-management and billing products from Timeslips. You can buy and use it separately from the suite, which is good because the full suite would be overkill for internal billing in most organizations.

Each person working on a project works from one of three data-entry areas. The first, a full-screen time sheet that has projects running down the side and days running across the top, is the most screen-consuming but the most logical. You can enter project hours every day and easily attach expenses and notes. The second is a daily sheet, where you can use times to start and finish clocking a service for each project. The third is a minisheet that occupies a small part of the screen when a user is working in other applications.

Time sheets can cover several people, each with several projects and billing rates. Periodic billing is simple; workers can either use one of the dozens of available reports or customize them. TimeSheet Professional supports importing and exporting of data to popular project-management packages, providing tracking of actual results vs. budget with minimal effort. You can also export data to any of several payroll packages.

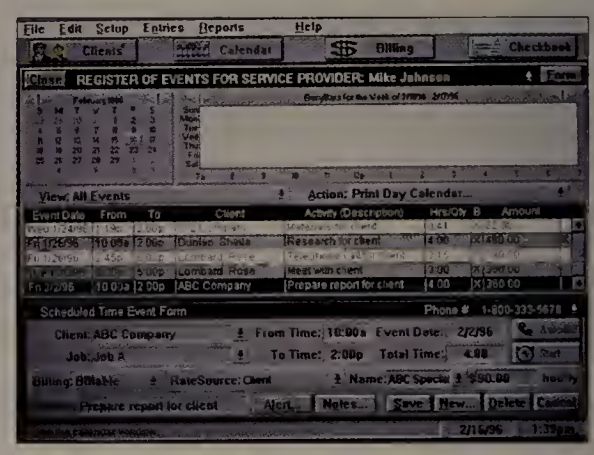
With TimeSheet, users can customize the program's language. For example, if you use the word "associate" or "contributor" instead of "staff" you can have it appear throughout the program.

The network version makes the consolidation of staffers' time sheets simple, and the interaction is protected with typical midrange security options and profile capabilities.

The interface is an improvement over previous versions. This version is almost standard in terms of dealing with Windows standards. Documentation is only adequate, but the online help was well-designed.

TimeSheet for Windows 4.0 is cheaper, sleeker and less confusing than any internal bill-back tool I've seen. It's good for consultants because of its low start-up effort.

Time & Profit 1.2
Overall grade: C
Price: $269
BytePro Corp.
Newport Beach, Calif.
(714) 622-0884



If a client-centered model works for your organization, you'll find **Time & Profit**'s interface easy

BytePro's Time & Profit 1.2 was designed to be a stand-alone system that integrates time-billing and more general accounting functions. It wraps all this under an interface that looks much like a contact manager, one that uses the calendar and personal contact information screens to gather most of the data.

This is a more client-centric way to look at the time-billing problem, and it makes more sense for an individual practitioner or office than the old, time-centric model. But most IS departments are less client-centered than the kind of professional practice BytePro had in mind for its product.

This product doesn't have a networked version, so it works only where one person tracks time for the entire staff, or where you set up a dedicated computer on which each staff member enters his information. Many IS organizations can live with this limitation, but most won't want to. And with other programs that support networked consolidation, the fact that this program was designed for stand-alone operation will be a barrier. This package receives a B+ for individuals, but it gets only a C for big IS shops.

But if a client-centered model works for your organization, you'll find Time & Profit's interface easy. Users can work from a task calendar, using the built-in timer to track time spent on each project. Like TimeSheet, users can assign multiple billing rates and add time to nonbillable activities.

The report-generation capabilities are good. They're clear, easy to use and cover most accounting and analytical output. Version 1.2 adds some positive features, including an intrinsic backup-and-restore feature to make it easy to protect data. It also can print the notes attached to project billing lines on the invoice.

The interface doesn't have many surprises except for a few non-Windows elements. Instead of the usual go-away box in the upper left corner of a window, some forms have a "close" button, and saving data usually requires more explicit actions than experienced Windows program users expect.

Documentation is very good. The manual is detailed and exhaustive; it covers every program detail.

Time & Profit 1.0 is a solid Windows program that's best applied to the professional practices for which it was designed. ■

Angus is a systems analyst at The Data Works Ltd. in Seattle.

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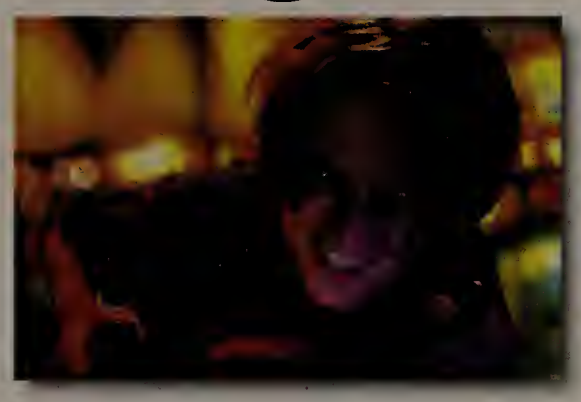

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Executive Track

Paul L. Klein was named director of application development for information systems at Rich Products Corp., a food products firm in Buffalo, N.Y. He was previously account manager at Electronic Data Systems Corp. in Pittsburgh.

Anthony Lackey was promoted to assistant vice president and director of the Computer Services Department at ABM Industries, Inc. in San Francisco. ABM provides physical plant and security services to businesses throughout North America.

Jerome N. Gregoire was named vice president and chief information officer at Dell Computer Corp. in Austin, Texas. He most recently was vice president of IS at Pepsi-Cola Co. in Somers, N.Y.

Lionel Brown was named CIO at the Reseller Network Division of Intelligent Electronics. The Exton, Pa., firm provides information technology products and services to government and business.

Dev Gupta was appointed assignment manager at 1-800-NETWORK's Boston-area office. He will develop and maintain client relationships and manage the placement of networking staff for the computer staffing firm, which is a business unit of MacTemps, Inc.

Christopher Carmon was named manager of computing and network operations at The Microelectronics and Computer Technology Corp., an industry-government research and development consortium in Austin, Texas. He has more than 20 years' experience as an IS manager.

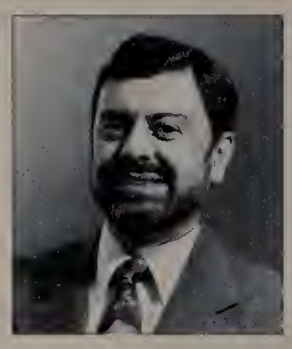
Louis R. Hughes was named senior vice president and CIO at Empire Blue Cross/Blue Shield of New York. Hughes had been a marketing director at Andersen Consulting.

Tor D. Folkedal was named CIO at Sumitomo Bank of California based in San Francisco. He has more than 20 years of banking experience and served as executive vice president and CIO at First Nationwide Bank.

John J. Ogrizovich was named vice president and CIO at NGC Corp. The Houston-based firm sells and transports energy products and services in North America and the U.K.

The American National Standards Institute (ANSI) has named **Bob Feghali** CIO. ANSI, in New York, is a private, nonprofit organization that brings together the public and private sectors to develop voluntary standards for several U.S. industries.

James R. Kinney, vice president and CIO of Kraft Foods, was inducted as president of the Society for Information Management (SIM) on July 1. He has been on SIM's executive board since 1990.



Felix Diaz was named chief technology officer at Interphase Corp. in Dallas. He was director of systems architecture and previously worked at ITT Telecom, Siemens Corp. and ITT Standard Electric.

Jack W. Shilling has been elected executive vice president at Allegheny Ludlum Corp. in Pittsburgh. He will oversee IT, engineering, manufacturing, technical and production control. He had been senior technical vice president at the manufacturer of steel specialty materials.

The National Association of State Information Resource Executives recently announced the following appointments:

- **Edward B. Altman** was named interim CIO for the state of New Mexico.
- **Richard Olsen** became director of Virginia's Information Resource Management Division as of July 1. He replaced Mike Durkin, who retired.
- **Don Hallberg** was named acting chief of the Office of Information Services for California's Department of General Services. He replaces P. K. Agarwal, who became CIO for the state Franchise Tax Board's IT division.

Debra Domeyer was named vice president of IS at The Times Mirror Co., the Los Angeles-based news and information company that publishes the *Los Angeles Times*, *Newsday* and other daily newspapers. She became director of IS last year.

Max D. Hopper and **Regis McKenna** have joined the board of directors at BBN Corp. in Cambridge, Mass. Hopper recently retired as senior vice president of AMR Corp. and chairman of its Sabre Group, which provides IS for thousands of travel professionals.

Patricia Anderson, executive vice president of the IS arm of defense contractor Lockheed Martin, was named to the board of directors at the Broad Alliance for Multimedia Technology and Applications, the global alliance for networked multimedia.

Transplants ahead

U.S. hospitals plan to undergo some major IT surgery over the next three years, a study says.

Hospitals plan to spend about $14.5 billion on services and software for critical applications, replacing between 60% and 90% of these applications, according to Input, a San Francisco-based researcher of information systems markets, software and the Internet. That amount will exceed planned expenditures on hardware, Input says. The study, conducted in March and April and released in August, surveyed 117 hospitals and hospital groups.

"It doesn't come as a surprise," says Galen Briggs, vice president and chief information officer at St. Jude Children's Hospital in Memphis. Briggs says most CEOs at the nation's hospitals consider information technology a competitive tool.

The massive investment presages potential glory and stress for IS personnel.

On the positive side, says Gwendolyn B. Moore, a partner at Andersen Consulting who specializes in the health care industry, IS managers and staffers can boost their departments' capabilities and help hospitals become more competitive. IS will have to build new capabilities to support areas such as disease management and physician support, she says.

The downside, or threat, is learning new technologies such as object-oriented programing to get to that stage, Moore says.

The highest replacement rates (about 90%) will be for patient-related applications (such as accounting and care) and medical records systems, Input says.

Input says managed care and its impact on the overall health care environment is the chief catalyst for the turnover. Hospitals also cited the need for better information and improved communications as top reasons.

But the report cautions that if the new applications merely improve those from the premanaged care environment, they will need to be upgraded or replaced soon after installation. — *Rick Saia*

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Computerworld Editorial Calendar

Aug. - Oct., 1996

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features	Show Distribution & Ad Readership Study Issues
Aug. 5	July 19	July 26	**Closer Look:** E-mail integration Approaches to the thorny problem of making multivendor e-mail environments work together	
Aug. 12	July 26	Aug. 2	**Buyer's Guide to Internet Security:** Corporations may be flocking to the Internet, but they are doing it with a wary eye. Fear of hackers and other security concerns have kept the corporate world from taking full advantage of the Internet's capabilities. This Buyer's Guide will look at firewall products and other technologies designed to support robust but secure Internet applications.	
Aug. 19	Aug. 2	Aug. 9	**Closer Look:** Object Databases **IS Leadership Series Supplement**	**Object World** Starch San Jose Study 8/20 - 8/22
Aug. 26	Aug. 9	Aug. 16	**Buyer's Guide to PC LAN Management Products:** How do you keep the departmental systems running without dedicating an IS staff member to tasks such as backup and access management? A variety of products help IS off load those responsibilities, and they work in cooperation with enterprisewide systems management packages. This Buyer's Guide will look at the strengths and weaknesses of some of those LAN-level management products, and explore user needs. **Monthly Supplement: Intranets** **Special Report:** The Future of Computing	**CA World** New Orleans 8/25 - 8/30
Sept. 2	Aug. 16	Aug. 23	**Special Report:** Salary Survey Computerworld's annual salary survey captures salary levels for IS professionals from the CIO to help desk operator. A major undertaking, the survey results are broken down by company size, region and industry.	
Sept. 9	Aug. 23	Aug. 30	**Closer Look:** Netware **Special Supplement:** Network 25 A joint Computerworld, Network World special 60-page magazine profiling outstanding users of networking technology from around the world. In addition to a listing of 25 outstanding organizations and detailed company profiles, the issue will examine regional differences in networking, trends in technology and useful advice on emerging networking issues.	**Networks Expo** Starch Dallas, 9/10 - 9/12 Study **Mobile World** Boston, 9/10 - 9/12 **Internet Commerce Expo** Anaheim, 9/10 - 9/12
Sept. 16	Aug. 30	Sept. 6	**Buyer's Guide to Internetworking:** With demand for bandwidth still on the rise, users are turning to technologies such as fast Ethernet and token ring switches. This Buyer's Guide will look at how users are addressing the bandwidth challenge and which products best meet their needs. **IS Leadership Series Supplement**	**Networld + Interop** Atlanta 9/18 - 9/20
Sept. 23	Sept. 6	Sept. 13	**Managing:** The best new books for IS managers **Special Report:** Top Web sites for IS managers **Monthly Supplement: Intranets**	
Sept. 30	Sept. 13	Sept. 20	**Buyer's Guide to Groupware:** The old groupware model went out the window with the emergence of the World Wide Web. Now, products such as Lotus Notes, Microsoft Exchange and Novell Groupwise XTD are being repositioned to act as gateways to the Internet. This Buyer's Guide will look at how those server-based products are handling the transition, and at some of the Web-based alternatives being offered by startups.	**SIM Fall Conference** San Francisco 9/29 - 10/2
Oct. 7	Sept. 20	Sept. 27	**Buyer's Guide to RISC Servers:** Enterprisewide applications often are being driven by multiprocessor servers based on Reduced Instruction Set Computer technologies such as PowerPC, Alpha, Sparc, MIPS and PA-RISC. This Buyer's Guide will explore the challenge of running the corporation on these products, and the strengths and weaknesses of some of the key vendors.	**Unix Expo** New York 10/8 - 10/10
Oct. 14	Sept. 27	Oct. 4	**Closer Look:** Videoconferencing Is it really ready for the desktop? A look at the state of the art in the PC space.	
Oct. 21	Oct. 4	Oct. 11	**Buyer's Guide to Notebook PCs:** They are the core computing platforms for a growing percentage of corporate users. Designed to work in hotel rooms, airports and in the office, notebook PCs pack the punch of desktop systems but carry their own set of technical challenges. This Buyer's Guide will examine the strengths and weaknesses of leading notebook vendors, and explore some of the issues that user organizations face when they roll out notebook-based strategies. **IS Leadership Series Supplement**	
Oct. 28	Oct. 11	Oct. 18	**Closer Look:** Java Development **Monthly Supplement: Intranets** **Annual Computerworld Campus Edition** (actual mail date October 31)	**Software Developers' Conf.** Washington, DC 10/29 - 10/31

* Includes ads within special editorial features and premium positions.

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Computerworld Editorial Calendar

Nov. - Dec., 1996

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features	Show Distribution & Ad Readership Study Issues
Nov. 4	Oct. 18	Oct. 25	**Buyer's Guide to Network Operating Systems:** Complex, enterprisewide applications need a robust network operating system to be working in the background. This Buyer's Guide will explore the NOS buying process, and examine how well NOS products such as Windows NT, Netware, Banyan Vines, and OS/2 Warp Server support the corporate user.	
Nov. 18	Oct. 25	Nov. 1	**Annual Computerworld Skills Survey:** Where is the talent going? What skills do you need to succeed in an IS career? This expanded feature details which IS skills are most in demand — by region, industry and technology — and which ones are bringing IS professionals the greatest rewards.	
Nov. 18	Nov. 1	Nov. 8	**Buyer's Guide to Multimedia PCs:** The day of the simple DOS-with-floppy-and-hard-drive PC has long passed. Today's applications demand video and sound, not just a blinking cursor. New generations of processor chips pack power, and they are tightly integrated with video and sound technology, high-speed CD-ROMs, speakers and huge-capacity disk drives. This Buyer's Guide will examine the high-end desktop product offerings of key vendors, and explore the technology path being carved out by the industry at large. **IS Leadership Series Supplement**	**Comdex Fall** Las Vegas 11/18 - 11/22
Nov. 25	Nov. 8	Nov. 15	**Closer Look:** Outsourcing/systems integration **Monthly Supplement: Intranets**	Starch Study
Dec. 2	Nov. 15	Nov. 22	**Buyer's Guide to Decision Support Tools:** CEOs and other executives are demanding new levels of dynamic access to corporate data. They need reports that will help them make strategic decisions. That leaves IS managers to implement technologies such as OLAP and ROLAP and links that deliver relational data through new vehicles such as the World Wide Web. This Buyer's Guide will examine some of the key decision support tools, and explore how user organizations are leveraging new technologies to support executive decision making.	**DB Expo** New York 12/2 - 12/6
Dec. 9	Nov. 22	Nov. 27**	**Closer Look:** Software license management **IS Leadership Series Supplement**	**Database/Client Server World** Chicago 12/10 - 12/12
Dec. 16	Nov. 29	Dec. 6	**Buyer's Guide to Futuristic Technologies:** Technologies such as virtual reality display devices and sophisticated pagers may have a place in many corporate applications. This Buyer's Guide will examine some of advanced technology products that actually may prove useful for IS managers and their staffs.They aren't just for fun and games anymore. **Monthly Supplement: Intranets**	

* Includes ads within special editorial features and premium positions.
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Editorial contacts (508) 879-0700: *Closer Look:* Johanna Ambrosio, *Buyer's Guide:* James Connolly, *Managing:* Alan Alter, *Special Report, IS Leadership Series, Best Places to Work:* Alan Alper, *Intranets:* Joe Maglitta

Issue Dates	Ad Closings	Custom Publications	Show Distribution & Ad Readership Study Issues
Aug. 12	May 31	**White Paper:** **Supply Chain Management** (part 3 of 4-part Manufacturing Directions Series)	
Aug. 19	June 21	**White Paper:** **RAID**	**Object World** Starch Study
Sept. 2	June 21	**White Paper:** **Financial & Human Resource Applications** (part 3 of 4-part Enterprise Software Directions Series)	
Dec. 2	Sept. 27	**White Paper:** **Network & Systems Management: Adopt for Change or Get Out of the Way** (part 4 of 4-part Manufacturing Directions Series)	**DB Expo**
Dec. 9	Sept. 20	**White Paper:** **Systems & Network Management** (part 4 of 4-part Enterprise Software Directions Series)	**Database/Client Server World**

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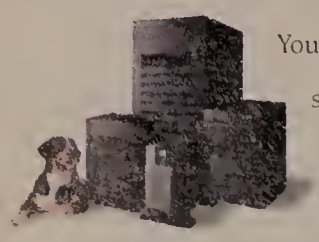

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Buyer's Guide

... do you trust your vendor?

Internetworking vendors 3Com and Cabletron score well in a *Computerworld* user survey, while Cisco, Bay Networks and IBM draw lukewarm feedback — particularly for their service and support

BY KEVIN BURDEN

Once you get past the acronym soup dished out by marketers and engineers in the networking industry, the process of buying switches, routers and other internetworking gear comes down to confidence that your chosen vendor will provide the products and services that do the job.

"We're through being roasted by vendors we're not familiar with," says Rick Beasley, a senior telecommunications engineer at NationsBank-CRT, Inc. in Chicago. "We get promised the world, then end up listening to excuses and still more promises that what we want will be available in the next quarter."

Now, only products that fill important niche applications will steer Beasley away from the relationship he's built with 3Com Corp. He says having a vendor he can depend on is more valuable than any advantage to be gained from best-of-breed products.

Because there are so many managers who, like Beasley, make buying decisions based on vendors' overall performance, *Computerworld* set out to examine the relationships between users and internetworking vendors. After all, changes in product lines are more common than changes affecting the five vendors that have been responsible for supplying most of the available products.

In a survey of 150 managers in large companies — 30 users of each of the five leading internetworking vendors — customers recalled their experiences with everything from product quality and technical support to vendors' integrity.

Users speak

Overall satisfaction ratings, with a grade of A meaning very good

	A	B	C	D
3Com	17	4	9	0
Cabletron	13	12	5	0
Bay Networks	10	9	10	1
Cisco	10	11	9	0
IBM	9	11	10	0

A = Very Good, B = Good, C = Fair, D = Poor, E = Very Poor

Base: 30 users per vendor. Numbers represent the number of users who applied the grade.

Overall, 3Com and Cabletron Systems, Inc. satisfy their customers better than the other vendors in our study. All vendors have strengths to capitalize on, but 3Com's and Cabletron's scores were consistently strong throughout the survey. Scores for reliability and service/support fall off for all vendors.

Internetworking, *page 100*

TECHNOLOGY OVERVIEW

BY LYNDA RADOSEVICH

Two separate network components drive the need for more bandwidth: the backbone, which is the portion of the network connected by routers and switches (no workstations or servers), and the connections between the servers and that backbone.

Network managers who need to alleviate those bottlenecks have four main technologies to consider: Fast Ethernet (switched or shared), Asynchronous Transfer Mode (ATM), switched Token Ring and switched Fiber Distributed Data Interface (FDDI). Of those, Fast Ethernet and ATM have the most momentum.

Also, network managers should watch out for a fifth technology, Gigabit Ethernet, a 1 billion bit/sec. technology under development by the Ethernet standards committee. Gigabit Ethernet won't solve most user problems for a while — a completed standard isn't expected for 18 to 24 months. Still, several start-ups have promised switches with prestandard Gigabit Ethernet ports early next year, and the large players are committed to it.

Some observers say Gigabit Ethernet will become a cheaper, more familiar alternative to ATM on the network backbone. If so, ease of upgrade could influence your thinking about an ATM vs. Fast Ethernet purchase.

But before you send any purchase orders, read the following snapshots on high-speed LAN technologies. They're based on the expert advice of networking consultants Skip MacAskill at Gartner Group, Inc. in Stamford, Conn., and John Morency at The Registry, Inc. in Newton, Mass.

FAST ETHERNET

Definition: The high-speed networking technology of choice for many, Fast Ethernet runs at 100M bit/sec. That's up tenfold from traditional Ethernet, which runs at 10M bit/sec. Both 10M and 100M bit/sec. Ethernet can run as shared networks, where network nodes share the bandwidth on a first-come, first-served basis, or switched networks, where switches set up dedicated circuits between nodes.

What to expect: Adapter cards that support both 10M and 100M bit/sec. connections will become more prevalent in user environments as Peripheral Component Interconnect (PCI) is adopted over Extended Industry Standard Architecture buses for desktop PCs. PCI is a local bus that provides a higher-speed data path between the CPU and peripherals such as network adapters.

Also, more PC and workstation vendors will build 10M/100M bit/sec. adapters directly in to PCs and workstations. In terms of switches, the price per port will drop to roughly $100 during the next year or so, making 100M bit/sec. Ethernet network

3Com does things right

CONTINUED FROM PAGE 99

3Com Corp.
Santa Clara, Calif.
(800) 638-3266
www.3com.com

3Com is doing some things very right. More than half its surveyed users graded their overall satisfaction with the highest mark available, a noticeable gap between it and the next-best vendor, Cabletron.

Overall satisfaction — a question that was asked directly rather than being a tally of other grades — is influenced by several factors. But one surely making a significant impression is the attention 3Com has paid to its products' "ease of setup," which 90% of its users gave favorable grades of good or very good. That again was the highest of the survey.

"3Com doesn't make the setup as challenging as other vendors do," says Eric Hindin, program analyst at The Yankee Group, a research firm in Boston. "Their products tend to be stackable, fixed-configuration, plug-and-play devices as opposed to Cabletron's and Cisco's, which are often highly configurable, modular boxes."

Users also scored 3Com's products well for "maintainability" and "ease of integration," but those scores were also high for the other vendors. For 3Com, though, value and integrity are high points that are less common among competitors. Of the five vendors in the survey, 3Com scored the highest for its "value for the dollar" and for following through on promises (neither is charted). "3Com is known as one of the lowest-cost providers, selling many of their products through [value-added resellers], which compete on price a lot," Hindin says.

As Karl Schild, network engineer at Promus Hotel Corp. in Memphis, puts it, "They're not hype-mongers. They've been hitting their release dates, and their products always perform as advertised."

3Com performs as advertised

	A	B
Maintainability	17	6
Reliability (24 users)	13	8
Integration with existing products	12	11
Ease of setup	9	18
Service and support (24 users)	5	7

Base: 30 users per vendor. Numbers represent the number of users who applied the grade. Not all users were able to answer questions on reliability and service/support. The categories listed are those in which the vendor scored its highest grades.

Cabletron pleases Fortune 500

Cabletron Systems, Inc.
Rochester, N.H.
(800) 332-9401
www.ctron.com

Fewer users awarded Cabletron an A for overall satisfaction than 3Com, but nearly three times as many gave Cabletron a B. And because Cabletron's primary customers are typically harder-to-please Fortune 500 companies, those grades are more positive for Cabletron than they initially appear.

Cabletron does a lot of handholding to keep its customers satisfied, says Randy Blackman, LAN administrator at Hasbro Corp. in El Paso, Texas. It also sells its products directly rather than through third-party channels, which does a lot for its quality of service, Hindin says. Cabletron "has more control over what it does for customers than companies working through resellers," he says.

Justin Fisher, network specialist at Blue Cross & Blue Shield of Connecticut in New Haven, says engineers periodically call to check for problems. "They've even stopped by unannounced when they're in town — always a salesman with an engineer."

And you don't have to be from a Fortune 500 company to get good support from Cabletron.

"Their support isn't just good, it's consistently good," says Frank England, a data communications specialist for Mobile County, Ala.

"They stay in constant touch with us. Their technicians are always checking up on us," says Craig Bodkin, IS coordinator at Trident Technical College in Charleston, S.C.

"Their quality control is very good. So is their support," says William Jones, lead technician at Maricopa Community College in Tempe, Ariz.

Cabletron's hand-holding works

	A	B
Integration with existing products	14	7
Maintainability	12	7
Service and support (24 users)	8	5
Ease of setup	7	18
Reliability (24 users)	7	11

Base: 30 users per vendor. Numbers represent the number of users who applied the grade. Not all users were able to answer questions on reliability and service/support. The categories listed are those in which the vendor scored its highest grades.

Support stings Bay

Bay Networks, Inc.
Santa Clara, Calif.
(800) 822-9698
www.baynetworks.com

Bay targets large, sophisticated user companies much as Cabletron does but without the same success in service and support.

Bay's service, which scored the lowest among the vendors, trickled down to affect other key categories such as "ease of setup." Although 21 users gave setup favorable ratings, Bay's score was the second-worst of the survey.

"Setup is difficult because the documentation is not that good. You're lucky if you even get a manual — even luckier if it's up to date," says Anthony Pecora, data communications specialist at Whitehall-Robins Healthcare, Inc. in Richmond, Va.

And it's not just the documentation. "Getting any real technical information out of them is very difficult," says Chris Davis, network engineer at Kalmbach Publishing Co. in Waukesha, Wis. "The documentation isn't much more technical than how to plug in the power cord, and it's impossible to get anyone to walk through your problems," he says.

Bay users also aren't as confident as other users that their vendor would keep up with switching technology. "They've been slow out of the blocks with newer technologies," Davis says. "Their Fast Ethernet switch, for instance, shipped nearly a year after their original ship date."

Despite all the complaints on service, several users say they haven't had to make a support call.

"The products are very reliable. We haven't had a reason to use their service," says Floyd Jochimsen, a senior networking specialist at the U.S. Postal Service in Arnold, Mo.

Users find few strengths

	A		B
Reliability (23 users)	12		9
Maintainability	10		11
Integration with existing products	9		12
Ease of setup	7		14
Service and support (23 users)	4		8

Base: 30 users per vendor. Numbers represent the number of users who applied the grade. Not all users were able to answer questions on reliability and service/support. The categories listed are those in which the vendor scored its highest grades.

Cisco: Solid but not top-rate

Cisco Systems, Inc.
San Jose, Calif.
(800) 553-6387
www.cisco.com

Cisco deals a full line of internetworking products but is best known for its router business. It leads the router market in nearly every possible measurement. That, Hindin says, "leads to a perception that Cisco is tops in the industry." But Cisco's customer satisfaction isn't as successful as its market presence.

Overall satisfaction scores are solid but not in the same league as Cabletron and 3Com. And users were more likely to award a B than an A in many categories. That suggests users are satisfied with the equipment but not overly thrilled.

Hindin attributes those attitudes to the nature of the beasts. "Routers are probably the most sophisticated pieces of internetworking equipment. They're complicated to install and difficult to troubleshoot, which doesn't excite users too much," he says.

Even so, approval from 75% of its users for "ease of setup" and "integration capabilities" is respectable and shows that users are ultimately happy with their vendor choice. "You get a good value for your money with Cisco. They can be expensive, but their quality, service and leadership are worth it," says Adam Young, systems programmer at Russell Corp. in Alexander City, Ala.

Other users seconded Young's position on paying more for quality.

"You pay for this kind of reliability. But we don't ever have problems, so price is not an issue," says Charles Hunter, IS director at the U.S. Department of Health and Human Services.

"I'm very satisfied with the reliability; they're worth every penny," says Fredrick Crispin, telecommunications analyst at Rutgers University in Piscataway, N.J.

Cisco copes with the challenges

	A		B
Reliability	17		11
Ease of setup	14		9
Maintainability	13		7
Integration with existing products	12		10
Service and support	8		10

Base: 30 users per vendor. Numbers represent the number of users who applied the grade. Not all users were able to answer questions on reliability and service/support. The categories listed are those in which the vendor scored its highest grades.

backbones more appealing.

Where to use it: It's an easy, cost-effective upgrade path for companies with Ethernet LANs. Use it for server support or in hub-to-hub or switch-to-switch interconnections where companies aggregate many 10M bit/sec. links to one Fast Ethernet pipe.

Advice: If you're integrating new desktops with PCI buses, buy combination 10M/100M bit/sec. adapters. Even if there's no need for 100M bit/sec. now, it offers great scalability for later. At roughly $200 to $300 per card, the 10M/100M bit/sec. cards cost the same or only slightly more than 10M bit/sec. cards, so it's a good investment.

When buying Fast Ethernet switches, look for good buffer management. Traffic that changes from 10M to 100M bit/sec. must sit in a buffer while the switch matches speeds, so get enough buffering to handle traffic flow in your environment. Also, look for input and output buffering and dynamic buffering that can automatically assign more space to a port that's getting overloaded.

More information: Fast Ethernet Consortium, University of New Hampshire Interoperability Laboratory (www.iol.unh.edu/consortiums/fe/).

TOKEN RING SWITCHING

Definition: A method in which switches set up virtual, point-to-point connections between nodes on a 16M bit/sec. Token Ring network. The advantage over traditional Token Ring is that the connected nodes have dedicated use of the network bandwidth.

What to expect: There's not much new functionality being added to Token Ring technology in general. Switched Token Ring raises some management concerns because dedicating the network on a per-port basis eliminates the usefulness of control frames, which is the automated token-claiming mechanism that provides statistical and management information.

Where to use it: It's an alternative for Token Ring shops that don't want to move to FDDI or ATM and are looking to relieve bottlenecks, typically on the backbone or in server segments.

Advice: Token Ring switches will mirror what the Token Ring environment is doing, so if you use Source Route Bridging (SRB), the switch should support SRB. If you use Source Route Transparent (SRT), it should support SRT. Also, look for NetBIOS name caching, which is an efficient way to handle Token Ring traffic.

More information: Alliance for Strategic Token-Ring Advancement Leadership (www.astral.org).

ASYNCHRONOUS TRANSFER MODE

Definition: A cell-switched technology based on a fixed-length, 53-byte packet. The fixed-length packet allows very fast switches to be built because the technology for sorting fixed-size cells is faster than the technology for sorting variable-size packets. The small packet size ensures that voice and video frames can be inserted into the stream

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TECHNOLOGY OVERVIEW

(Continued from page 101)

often enough for real-time transmission.

What to expect: It's building momentum as the leading backbone technology. The ATM market is maturing, which means finalized standards, proven capabilities in the user base and falling prices. But ATM is still expensive compared with Fast Ethernet (it costs $650 to $750 per 25M bit/sec. ATM connection and $800 to $900 for 155M bit/sec. ATM). And standards work is still under way on routing and LAN emulation.

Where to use it: In the main backbone and server connections. It's good for companies with variable traffic needs during the day that need quality of service and bandwidth reservation for voice or video traffic.

Advice: The emerging private network-to-network interface standard, which will enable different vendors' ATM equipment to interoperate, may require users to swap out ATM cards, modules or the whole switch. Therefore, purchasers should check on the vendor's upgrade schedules and negotiate for the upgrade before buying.

More information: The ATM Forum, (415) 949-6700 (www.atmforum.com).

ATM Network Planners Association, (214) 317-7066 (www.anpa.com).

FIBER DISTRIBUTED DATA INTERFACE SWITCHING

Definition: A method by which switches set up virtual, point-to-point connections between nodes on a 100M bit/sec. FDDI network.

What to expect: FDDI is being eclipsed by Fast Ethernet and ATM, but it's still a viable technology and has a long shelf life. Switching lets companies extend the existing FDDI environment using dedicated links. Pricing is still high — about $3,000 per FDDI port — and there are few vendors that offer FDDI switching. Most vendors treat it as a tactical issue to service existing FDDI shops.

Where to use it: It's a tactical approach to help people who've invested in FDDI protect that investment, usually by relieving congestion on a network backbone or server ring.

Purchasing advice: The good news is you don't have a ton of choices so the decision process is pretty straightforward. The bad news is you don't have a ton of choices. Vendors will continue to support FDDI into the foreseeable future, but nothing new is expected. The product category is mature, and if you're buying FDDI, you probably already have it and you'd probably stick to the product line offered by your current vendor.

More information: FDDI Consortium, University of New Hampshire Interoperability Laboratory (www.iol.unh.edu/consortiums/fddi).

Radosevich is a freelance writer in Belmont, Mass.

IBM scores with partnering

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IBM's internetworking business isn't its strongest line. Most of its scores in the survey, including overall satisfaction, were below those of the other vendors, a situation that won't fuel any bragging rights. And if not for its many partnerships with other vendors, IBM wouldn't even have a visible presence in internetworking.

The trouble with IBM is that it's been late to many of the internetworking markets, Hindin says. Because it missed the router revolution, he says, IBM needed to partner with Proteon, Inc. It also missed the hub business, he adds, forcing it to use Chipcom Corp. as an OEM. And now it's partnered with Xylan Corp. and Cascade Communications Corp. for switches, he says.

The positives to IBM's reselling strategy are best-of-breed partnerships. Users stand a decent chance of getting cutting-edge equipment, which is why "technology leadership" is IBM's highest score. "The products we've bought from [IBM] have always been thought of as the vanguards of the industry," says Marc Alan Reichbart, CEO of Basset Hound Co. in Boynton Beach, Fla.

But integration and configuration suffer from the partnering practice. IBM was the only vendor without "integration" among its top five scores, and "ease of configuration" received the lowest approval rating of all the vendors. "It all works, but I don't want to go through that integration nightmare again," says Benton Cash, senior manager at Aroostook Medical Center in Presque Isle, Maine. ■

Burden is *Computerworld*'s senior researcher.

On the cutting edge through partnerships

	A	B
Technology leadership	8	12
Reliability (22 users)	6	13
Value	6	13
Service and support (22 users)	5	9
Ease of setup	4	15

Base: 30 users per vendor. Numbers represent the number of users who applied the grade. Not all users were able to answer questions on reliability and service/support. The categories listed are those in which the vendor scored its highest grades.

UP TO THE MINUTE

With Networld/Interop kicking off this week, vendors have been busy with announcements in the internetworking arena. Recent developments include the following:

JOHN BLECK

▶ In a battle to offer cost-effective switching, Cabletron laid out plans to target Cisco with a low-end switch called MMAC-Plus Access. Meanwhile, Cisco is preparing a high-end switch, Catalyst 5500, to compete with Cabletron. Cisco also announced a switching scheme — Tag Switching — to rival Ipsilon Network, Inc.'s Internet Protocol Switching.

▶ Bay Networks officials say that over the next three months the company will phase in delivery of long-awaited LAN switching modules for its System 5000 hubs. Bay also announced a software upgrade that will add routing functionality to its Centillion 100 and System 5000 switches. The upgrade will be available by the middle of next year.

▶ Bay also announced plans to acquire cable modem maker LANcity Corp. with the intention of providing high-speed data transmissions to homes and offices via cable television networks.

▶ Ericsson, Inc. and NEC Corp. announced they would work with Ipsilon's IP Switching technology to build their next generation of switches.

▶ UB Networks, Inc. released Java-based tools for remote device control via the World Wide Web. NetDirector@Web is intended to let a manager check the status of his hubs and fully interact with each one from any Web browser, via either his network or a modem.

▶ Researchers at Bellcore warned that Internet traffic could swamp telephone networks, causing loss or interruption of telephone services unless the networks are upgraded.

▶ Cabletron demonstrated interactive Web-based network management through its Spectrum Enterprise Manager 4.0 software, using Java, Common Object Request Broker Architecture 2.0 objects and Microsoft Corp.'s ActiveX framework to monitor and manage networks from browser-equipped PCs.

▶ 3Com announced it has developed but not shipped its first wireless device, a 10M bit/sec. wireless Ethernet card. 3Com also announced a reorganization in which separate groups were formed to focus on high- and low-end customers.

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If you're in the market for a small business server, you'll want to check out AS/400® Advanced Series. It's a lot less expensive than similarly configured competitive systems. In fact, prices start as low as $7,995[1].

If that's a surprise, consider this. With AS/400, the operating system, relational database, security, systems management and communications are fully integrated into the system. That means there's no need to go out and find the latest and greatest software – it's all built in. No assembly, no compatibility testing, no programming. You can get right down to business. And here's another surprise. According to an independent consultant's study[2] of American small businesses, AS/400 has the lowest cost-of-use over a five-year period. The study compares leading INTEL-based LAN server platforms to the 64-bit AS/400 and examines system, staffing and networking expenditures.

So if it's time to move up to a server, put AS/400 Advanced Series on your shopping list. Costs less to buy. Costs even less to own. If you'd like to know more, visit us at www.as400.ibm.com or call 1 800 IBM-4YOU, Priority Code GAS6B002 for a detailed information package including a copy of the IDC report.

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In Depth

By David Rosenthal

I walk in the office and all eyes lock on me. No surprise; some of the full-timers always fear I'm there to ace them out. They oughta relax. I don't want their jobs. Been there. Done that. I like being a contractor. I'm free. I'm my own boss. A fresh challenge every day. Drawbacks? Sure. Vague assignments. Political cross fire. Elusive PCs. But that's all part of my job because . . .

Stella Johnson

I am a temp.

I'm a contract IS professional.

I'm usually assigned to fairly large companies. I started by working for a consulting firm, then switched to contracting through an agency.

Before doing this, I was a salaried employee for 12 years at one company. Why the change? Professional growth and money were the biggest reasons. Temporary work gave me the chance to see different work environments, software tools and corporate cultures.

As a contract employee (or consultant; I'll use "contractor" to mean both), you're always the new face in the department. Your job is to make the customer happy, but you know little about the people you have to please. Unlike permanent workers, who have several months before a serious evaluation, you're expected to perform right away.

If you work for a good consulting firm or flexible staffing agency, especially one that has worked with the customer in the past, its staff should be able to tell you what to expect. That is a big asset.

I am a temp, *page 106*

I am a temp

CONTINUED FROM PAGE 105

I've set up some guidelines for contractors and those who use them.

First, rules for contractors:

Set realistic expectations

Do this even before accepting the assignment. For example, my current assignment requires me to test and modify C programs that use Lotus Development Corp.'s Notes application programming interface (API). I have experience with C, and I've been a Notes developer for several years. But I had never before used the API, nor had I worked on the customer's required operating system and compiler.

The staffing agency and I made sure the customer knew all that before I got the job. Knowing my limitations up front, the customer wasn't surprised to see me heads-down in manuals for the first couple of weeks. Had I claimed to be an API expert in order to get the job, I doubt I'd still be there today.

Know who your boss is

If you're working through an agency, make sure the manager from your firm knows that as well. The only bad review I had in 13 years of professional work came when my consulting firm's manager contacted a customer's employees rather than my boss for input. In that assignment, I filled a management spot while a permanent replacement was sought. The job required balancing the goals of several departments with limited resources; keeping everyone happy wasn't possible.

The two directors I had worked with were relatively pleased with my performance, but some of the managers were *not*. Guess who had time to provide inputs for my review? The quality assurance manager said I spent too much time installing and evaluating the Notes Web Publisher, a task assigned to me by the director of information systems. I had no choice about what to work on: The IS director was the person who hired me and signed my time sheets.

Avoid office politics

That isn't always possible, but do try. The tricky thing is that most projects have some political angle, but as a newbie, you won't know about them. Let others handle politics.

Stay focused

As a technical professional, you'll often be asked to help with myriad problems — by the administrator whose PC won't print, by the developer in the next cube working on a different project or by the manager of another department. On one hand, those requests represent an opportunity for more work. On the other hand, it's easy to get too busy helping to get your original work done.

Contractors who don't accomplish their primary task are soon unemployed. Discuss this issue with your customer manager at the start of your assignment. Does he want you to take on additional work? Does he want such requests to go through him?

Keep a log

You may or may not be asked to keep a log of your time. If you aren't, do so anyway. Should a question concerning your progress or billing come up, the documentation will be invaluable. I admit, I don't always keep up this practice on long-term assignments (assuming the customer didn't ask for it), but I do so until I feel comfortable with the situation.

Every week, read your log and think about how your activities relate to your assignment. Are you doing what was described? If not, what changed and why? Most important, do your client managers know about any changes? If not, inform them immediately.

Grit your teeth, and be a pro

If you think some part of your task is being designed incorrectly, you have an obligation to try to get it fixed. But remember that it's *not* your project. The customer's always right, especially when you're a temp. No matter how correct you are technically, if you can't convince the customer of that without getting him steamed, you're not going to succeed.

I have often been asked to implement transaction processing systems using Notes. Notes isn't a good fit for that type of system. I can usually convince the client to use a better tool. The one time I didn't — I wasn't on the team at the start of the project — the client ended up not using the system after investing 15 months of consultant time and at least twice as much client staff time in the project. We knew there would be performance problems, but the customer wanted Notes so the customer got Notes.

So what about the other side? If you manage temporary professionals, what can you do to help them get the job done right? Here are a few observations:

Set expectations

Let your contractor know what to expect ahead of time. A good agency will facilitate that by asking for information. On some assignments, I've had no real notion of what would be asked of me before I showed up for work. On others, I've had entire specifications to review before I arrived on site. I don't mind investing a few hours of reading to get a head start: It helps me make a better first impression, and it helps me do productive work sooner.

Provide logistical and policy information

On my very first assignment, I was asked to show up for work at 7 a.m., only to find that the company parking lot didn't open until 7:30. Talk about a roadblock to success!

Later, at the same client, I noticed that several of the regular employees had cellular telephones. Since I didn't have an office phone at the site, I started to bring in my own cellular. I was therefore quite surprised when security stopped me in the hall as I was taking a call. It turned out temporaries weren't allowed cellular phones at that company. I'm still trying to figure *that* policy out.

If your company employs temporary workers frequently, see if your human resources department has a handout with this type of policy information. If not, put one together yourself. Be particularly careful to note where policies for temporary workers and regular employees differ. The new workers need to know those facts, and it's to your advantage not to make them investigate — after all, you're paying by the hour.

Set up work space and other resources in advance

Only twice have I had the pleasure of walking in to a new assignment and finding a computer to use on my first day. Other times, I've waited as long as two weeks to get equipment. I don't mind waiting, but the sooner I can get to work, the sooner I can get the job done.

Lead time can be really important. I'll never forget the time I was told it would take four to six weeks to get more disk space for the Notes server we were using for testing. That wouldn't have been so surprising if the client hadn't been one of the largest PC manufacturers in the world. The department wasn't allowed to buy from anyone else, but internal orders had the lowest priority of any channel. I could have driven down to CompUSA and bought the drive I needed that day, but that was against the rules. I felt like I was inside a "Dilbert" cartoon. (Of course, I didn't share my feelings with the client; there's not much to be gained from whining.)

Tell your staff what the contractor's there for

Let the rest of your staff know what the contractor is there to do. If you don't want the contractor distracted by work outside their assignment, tell your team not to ask for help. ■

After 12 years as a permanent employee at a Fortune 100 company, David Rosenthal moved into the temporary professional life as a senior systems consultant. He is now an independent contractor at Tech Specialists, a division of Office Specialists, Inc. in Peabody, Mass. For the past four years, he has specialized in Lotus Notes application development. He is currently on assignment working with the Notes 4.1 API.

A Salute to the Best in *Object-Oriented Application Development*

The Computerworld Object Application Awards recognize companies who are leading the way in application development using object technology. The 1996 Awards ceremony was held during the Object World West show in San Jose, California on August 21 in the San Jose Civic Auditorium.

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▼ *Best Distributed Application Using Object Technology*

US Transcom
Application: TRAC2ES

▼ *Best Use of Object Technology to Integrate Legacy Systems*

Chubb & Son, Inc
Application: Masterpiece II

▼ *Best Application Utilizing Reusable Components*

Texas Instruments / SEMATECH
Application: WORKS System

▼ *Best Application that Demonstrates Cost / Benefit of Using Object Technology*

Baxter Health Care Corp.
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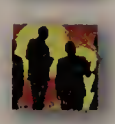

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- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
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- 65. Communications Systems/Public Utilities/Transportetion
- 70. Mining/Construction/Petroleum/ Refining/Agricultura
- 80. Manufacturar of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90. Computer/Peripheral Dealer/Dist./ Retailer
- 95. Other_____ (Please specify)

2. **TITLE/FUNCTION** (Circle one)
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- 19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Menagement
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Administrative Services
- 23. Dir./Mgr. Sys. Development, Systems Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Menagement
- 60. Sys. Integrators/VARs/Consulting Mgt.

CORPORATE MANAGEMENT
- 11. President, Owner/Partner,General Mgr.
- 12. Vice President, Asst. VP
- 13. Treasurer,Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
- 51. Seles & Mktg. Menegement
- 70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that epply)

Operating Systems
- (a) Solaris
- (b) Netware
- (c) OS/2
- (d) Unix
- (e) Mac OS
- (f) Windows NT
- (g) Windows
- (h) NeXTstep

App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

4. How many people are employed at this location and in your entire organization, including ell of its branches, divisions and subsidieries? (Select only one per column.)

	1. At this location	2. Entire Organization
A. 20,000 +	❒	❒
B. 10,000 –19,999	❒	❒
C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
H. 20 – 49	❒	❒
J. 10 – 19	❒	❒
K. 1– 9	❒	❒

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20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Releted Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Buraaus, Softwara Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other_____ (Please specify)

2. TITLE/FUNCTION (Circle one)
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21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Progremming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Mgt.
CORPORATE MANAGEMENT
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12. Vice President, Asst. VP
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DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Informetion Centers/Libraries, Educators, Joumalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle ell thet apply)
Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

4. How many people are employed at this location end in your entire organization, including all of its branches, divisions and subsidiaries? (Select only one per column.)

	1. At this location	2. Entire Organization
A. 20,000 +	❒	❒
B. 10,000 –19,999	❒	❒
C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
H. 20 – 49	❒	❒
J. 10 – 19	❒	❒
K. 1– 9	❒	❒

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Computer Careers

IS inheritance

Three families, representing two generations of IS professionals, reflect on the industry's past, present and future

by Dana Crenshaw

SONNY WILLIAMS

Story author and subject Dana Crenshaw ponders his own IS career

In the mid-1950s, Cesar Sala graduated from college and began working for a banking and insurance conglomerate in his native Havana. A four-year degree netted him a job at $4,200 annually.

The company he worked for had the third-largest data processing installation in the country. After spending a year in the accounting department, he was transferred to the mechanical accounting department — distinguished by its use of computers. In 1961, Sala emigrated to the U.S.

The first computer Sala operated was a RAMAC-305. The typical configuration for the RAMAC consisted of a console with an electric typewriter-like keyboard. Data was input first through high-speed card readers and then tape drives. The processing unit consisted of four cabinets full of electronic tubes (Type 2050), which almost always "crashed" the system because of their habit of burning constantly.

In 1989, Sala's son, also named Cesar, began his career in the information systems industry. After earning a bachelor's degree, he took a job at $18,000 per year. That figure was almost four and a half times the salary his father earned 34 years earlier.

The relationship between this father and son has been enhanced by a mutual interest in computers. The senior Sala writes, "I feel I have accomplished most of the goals I set for myself. I have the added satisfaction of seeing my son choose the same field and create a role-reversal situation where I am now the one asking the questions, with him answering."

Their relationship also sheds light on the past, present and future of the computer industry. Along with two other families of IS professionals, they

recently reflected on their careers and how the two generations compare. Their thoughts reveal some interesting contrasts.

Painting the past

Neil Jones – 61

Neil Jones began his IS career in 1968 after two years of college. An IS consultant from Snellville, Ga., he is skilled in Cobol, Clipper and Pascal. Salary: mid-$30s.

"I was initially trained to program for an IBM 7080, using the 7080 Autocoder language. We didn't have disk drives on these machines, only a card reader and tape drives. I worked in Cobol, and later in Fortran, on 360-class machines until 1979. I got into IS in 1968 at the Social Security Administration, which had started a training program to develop new Cobol programmers. Programming has forever been as interesting as I expected.

"Later, I was a part of a team which developed and provided support for a PC software program written in-house using Clipper. Recently, I started in a new programming position maintaining Cobol programs.

"It's easier for my son to be successful in today's IS environment. When I got my break, there were no advertisements for jobs, and there were very few places to get training. These days, job listings and training opportunities are in abundance."

Chris Jones

Also from Snellville, Chris Jones has an associate's degree in data processing. He began his IS career in 1985 trained in Cobol. A programmer in banking, his IS skill is still Cobol.

"When I started working 11 years ago, entry-level programming and support jobs were easy to come by, even without a four-year degree. The skills that were most in demand were for the IBM mainframe, using Cobol, JCL, VSAM and CICS. I didn't see as many contractors then.

"The industry has undergone a great transformation since my father began. In his days, IS wasn't integrated into the core business, and information was not viewed as a 'strategic asset.' Also, programmers were more knowledgeable about the hardware."

Canvassing today

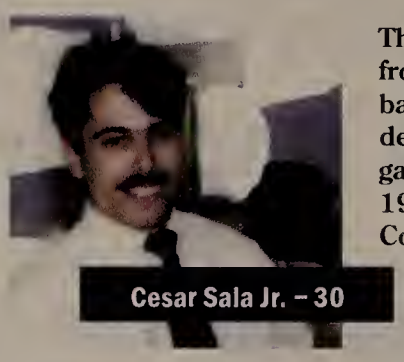
Cesar Sala Sr. – 59

The elder Sala, from Miami, has a bachelor of arts degree in business administration. He began his career in 1955 in accounting. Sala is the general manager of a professional photofinishing plant and oversees all plant operations, including IS. Salary: upper-$40s.

"It is easier for today's generation to succeed: Since the advent of the PC, the computer has become a household word; and computing is taught from kindergarten to college.

"Everyone has the opportunity to take courses through adult education or a community college. The industry no longer has to sell the idea of the need for computers, thus making easier the implementation of systems by analysts, programmers, etc.

"I feel I have come full circle in my career. I started working with computers in the mechanical accounting department. Through downsizing, the company reduced the staff to two operators and two data-entry persons. I was offered the position that I have because of my experience with the company and a knowledge of the operations of the plant. Over the years, our equipment and processes have advanced with technology. Everything has become controlled by computers."


Cesar Sala Jr. – 30

The younger Sala, from Atlanta, has a bachelor of science degree in IS. He began his IS career in 1989, trained in Cobol and CICS. Sala is an applications programming consultant and is skilled in Windows 3.1, Xbase programming, Novell and PCs. Salary: mid-$40s.

"In days past, it seemed that only large companies could afford computers. Today, the computer has become accessible to all. Not only are computers in the offices, they're in the homes as well. Training and software have also become more widely available.

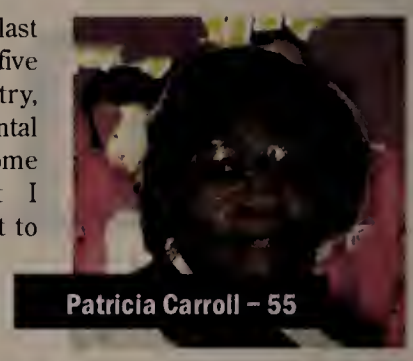
"With the increased acceptance and availability of the computer, the competition in the IS industry has increased. Because of that, it is a little harder to succeed today than in my father's day. More and more people have access to the same opportunities, so the selection pool is much bigger for potential employers. Thus, it's important to stay informed on IS issues and to stay on top of the rapid changes in technology.

"To keep my level of knowledge up to par with today's technology, I read trade magazines, participate in technical forums or group discussions, attend training classes and the PowerBuilder users group meetings. I also visit programming forums, such as Clipper and PowerBuilder on CompuServe and America Online, and surf the Internet."

Framing the future

The mother of Dana Crenshaw, Patricia Carroll, from Hamden, Conn., began her IS career in 1968 with an associate's degree in applied science. Originally trained in Autocoder, BAL, Fortran and RPG (in-house training), she is an IS manager in the communications industry, responsible for development and maintenance of business systems. Salary: mid-$60s.

"I was hired as an entry-level programmer and was promoted three years later to programmer. My peers included former applications clients who had been retrained, housewives reentering the workforce, technical institute graduates and a couple of very bright high school graduates. My job encompassed programming for IBM 1401 and 7070 machines — 4K and 8K memories — in Autocoder, BAL, RPG and Fortran.


Patricia Carroll – 55

"I expected to last about three to five years in the industry, until the mental stress would become so onerous that I would have to quit to look for a saner environment. Twenty-eight years later, I'm astounded I have lasted — and experienced so many radical changes that seem to have come out of a science-fiction movie. I find today's IS industry to be incredible, invigorating and challenging — with limitless possibilities.

"In the next century, I expect we will see unbelievable applications of computer technology, especially in the field of medicine. I project that personal computing will completely replace mainframe computing. Opportunities will abound for the entrepreneur who can take charge and doesn't fear failure. To be successful, you'll need to be a person of integrity, be an intelligent risk-taker and someone who doesn't take no for answer until you're convinced no is the right answer.

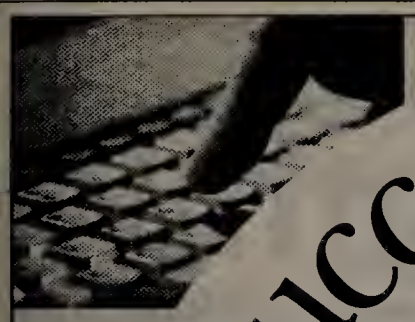
Dana Crenshaw – 33

Crenshaw entered the IS workforce in 1986, with a bachelor of science degree in IS. He was trained in Fortran and Basic. A systems analyst consultant and team leader from Austell, Ga., he is skilled in Clipper, PowerBuilder 4.0, Visual Objects, Novell and SQL. Salary: mid-$40s.

"During my 12-year career, I have observed many significant changes in the industry, but none more dramatic than the loss of commitment by companies to their staff's career development.

"I find that I now have to take full responsibility for establishing and reaching my career goals. I have to take classes on my own time and with my own money, if necessary, and I have to make sure I am skilled in the latest technology, such as the Internet, Hypertext Markup Language, graphical user interface, PowerBuilder, Oracle, etc. The bottom line is that I can't sit back waiting for opportunity to knock. I prepare myself and seek out opportunity.

"What I see for the future is a change in the industry where about 60% of the workforce in large companies will be contractors. The contractors will be telecommuters who split their working time between home and the office. The skills that will be in demand the most will revolve around a combination of client/server technology and the Internet. I expect the pay for those with skills in this area to continue to grow where six-figure salaries become common." ■



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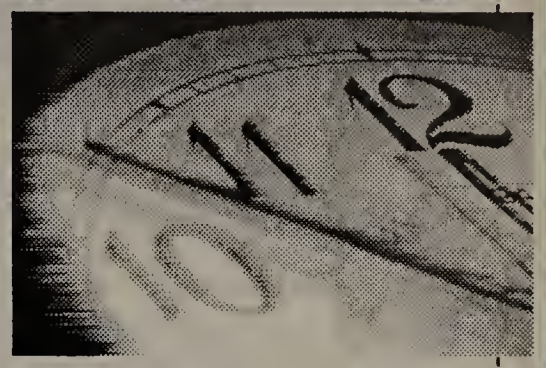

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Qualifications: College/university graduation with major in computer science, mathematics, engineering or related curriculum. Comprehensive knowledge of multi-user operating systems, databases & communication networks/protocols, & of related formal & operating standards. Extensive knowledge & experience in communications; WAN, LAN & client server technologies, systems control software analysis, & data base administration. Demonstrated ability to perform multi-user systems software updates & installations, to establish & maintain multi-user systems configurations, to implement state-of-the-art WAN, LAN, client server & data base technologies. **Successful candidate must pass a criminal conviction investigation.**

To Apply: A completed state application form must be received by 5:00 PM on September 27, 1996. Send to VEC, HRMS - Room 101, P.O. Box 1358, Richmond, VA 23218, or to any local VEC Office or FAX to 804-371-2814. TDD 804-371-8050.
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Systems Analyst II

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- *Strong verbal/written communication skills required.*
- *Knowledge of PC software (MS Office) and communications hardware/software and protocols preferred.*

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Support Analyst

The Egleston Children's Health Care System - a leader in pediatric health care delivery - is seeking an experienced Support Analyst to join our IS team.

This individual will support our Cyborg HRIS/Payroll system. Requirements include a BS and 3-5 years of HR/payroll application support on a DEC VAX/Alpha platform. Cyborg experience definitely a plus. Top-notch customer service and communications skills are a must!

For consideration, send resume and salary requirements to: **Human Resources, Egleston Children's Health Care System, 1405 Clifton Road NE., Atlanta, GA 30322 or Fax 404-315-2059.** EOE

Egleston Children's HEALTH CARE SYSTEM

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- *A good understanding of network communications a plus.*
- *Also needed is an exp. Assembler programmer with a good understanding of VTAM table configuration & PC software installation.*
- *Strong IBM mainframe background with exposure to other platforms.*
- *Working knowledge of various LAN configurations a plus.*
- *All candidates should possess good communications skills & a willingness to travel. BS or equiv. reqd. Relocation to Naples, FL reqd.*

*Please submit your resume to: **Allen Systems Group Inc., 750 11th St. S., Naples, FL 34102 Attn: Human Resources and/or FAX: (941) 263-1952. EOE Drug Free workplace.***

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Systems Analyst - SALARY: $41,000.00 per year. HOURS: 8:00 a.m. to 5:00 p.m., 40 hours per week. JOB DUTIES: Analyze user requirements, procedures and problems to automate processing and improve or migrate existing computer application software systems to a different operating system and data base using C, COBOL, Basic or operating systems VAX/VMS, UNIX, DOS, using databases Rdb/SQL, ACCESS 2.0. EDUCATION REQUIREMENT: Bachelor's or equivalent degree in computer science or engineering; or electronic or electrical engineering or communications. EXPERIENCE REQUIREMENT: Two years in the job offered or in related occupation of Software Engineer. SPECIAL REQUIREMENT: The Required two years experience in the job offered or the related occupation must include two years work skills in Rdb/SQL and ALL-IN-1 on VAX/VMS and one year work skills in UNIX/DOS databases. Job located in Atlanta, GA. Send resume or apply in person at: Georgia Department of Labor, Job Order # GA 6015721, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909, or the nearest Department of Labor Field Service Office. Must be legally authorized to work permanently in US. EEO/AA Employer.

PROGRAMMER ANALYST

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SOFTWARE ENGINEER to design, develop, implement, test and support software systems for business applications on UNISYS and UNIX computers using XGEN, COBOL, DMSII, WFL, COMS, ALGOL, GAMMA, ERGO, DASDL, LINC14 and Shell programming; Prepare online and batch technical specifications and documentation relative to establishment and functioning of complete operational systems. Require: B.S. degree in Computer Science with three years of experience in the job offered or in the related occupation of Systems Analyst. M.S. degree in Computer Science with one year of experience will be accepted in lieu of the B.S.C.S. degree and three years experience. 40% travel to client sites within the U.S. is required. Salary: $53,500 per year, M-F, 8 am to 5 pm. Send resume in duplicate to: Dept. of Labor/Bureau of Operations 1320 Exec. Ctr. Dr., Atkins RM. 144 Tallahassee FL 32399-0667 Re: Job Order # FL-1486211

Systems Analyst. $45K/yr. 8a-5p, 40hr/wk. Analyze/dsgn/dvlp/implmt projs in RDBMS (INGRES, INFORMIX, SYBASE) using structured prgmng techniques & Relational Paradigm-object dsgn & dvlpmt (C++). Do configuration mgmt, performance enhancements (database timing & prgm efficiency) & re-engg. Bach or equiv in comp sci or engg; electronics or electrical engg. 2yr exp in job offd or in related occupation systms or s/ware engr. Reqd 2yr exp in job offd or in related occupation must incl work using skills in Informix & Ingres RDBMS & Sybase using 4GL & C++, Powerbuilder, X-windows. Job loc: Atlanta, GA. Send resume or apply in person at GADOL, JO# GA 6021770, 2943 N Druid Hills Rd, Atlanta, GA 30329-3909 or nearest DOL Field Srvce Office

Design development & testing of ACES 32 bit software programs to automate the design & manufacture of roof trusses, using models to predict & measure efficiency of design. Provides technical guidance in system maintenance. Makes enhancements to system following its release to customers. Must have B.S. degree in Computer & Information Sciences and 2 yrs exp. in the job offered or 2 yrs in a related occupation (Programmer of software for roof truss design & manufacture) including use of C and C++ programming languages. M-F 9am-5pm. Salary $35,130.05/yr. Send resume only to Job Service of Florida, 701 SW 27 Ave., #47 Miami, FL 33135-3014 Job Order # FL 1488485.

Systems Analyst - in Jackson, MS - Analyze user reqs, design, develop, test and implement info. management applications on IBM mid-range AS/400 systems using RPG/400 and CL/400. 8AM-5PM; 40 hrs./wk; $47,000/yr. Req. 18 months exp. & Bach. Deg in Comp. Sci., Math or any Engineering. Apply MS State Employment Service, PO Box 13348, 5959 1-55N, Frontage, Rd., Jackson, MS 39236-3348, Job order number MS 2769449.

MICROWAVE/RF PRODUCT DESIGN ENGINEER. Design & manufacture microwave product series, amplifiers, switches, mixers, up & down converters (mixers, etc.). Perform tests these modules. Write design & tech. standards for Co. products. Must speak & write fluent Chinese, especially engng. terminology. Must travel to China to solve tech. problems of Co. branch, 3/4 times/yr. stay 1/2 wks. M.Sc. (elec. eng.), 2 yrs. exp. in job offered, or 4 yrs. exp. computer science & microwave software engrg. 1 yr. design & testing trng Salary $42,328/yr. 40 hr/5 day wk. Send resume:- Job Service Florida, 2660 W. Oakland Pk. Blvd. Ft. Lauderdale, FL 33311, Job order #FL-1487271

SYSTEMS ANALYST. Analyzes user requirements, procedures, and problems to automate processing or to improve existing computer systems. Bachelor's degree in computer science, engineering or math-related and 2 years experience in job offered or software development/consulting required. Two years experience with C, C++, SQL, TCP/IP, Fortran, Pascal, Basic, Cobol, Kermit, DBaseIV. Must be able to travel. $39,000/year. Apply by resume to Georgia Department of Labor, Job Order #GA6013537, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office.

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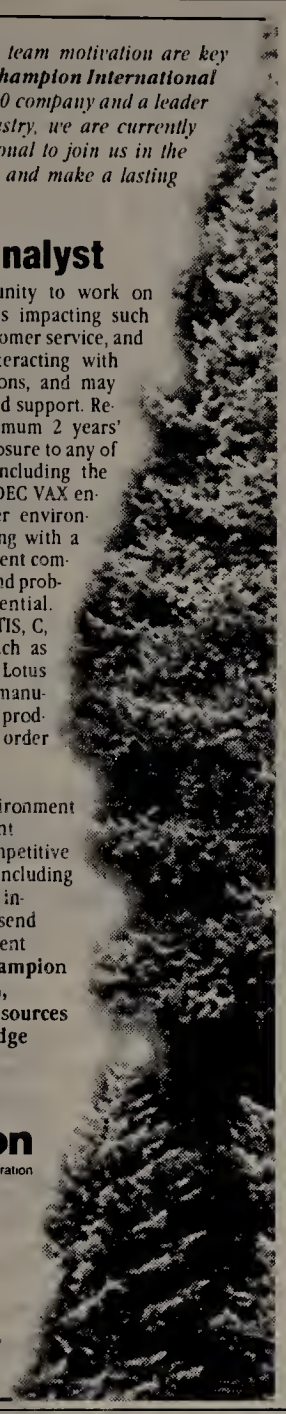

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PROGRAMMER ANALYST [2 openings] - Plan, develop, test & document computer programs, applying knowledge of programming techniques & computer systems; evaluate user requests for new or modified programs to determine feasibility, cost & time req'd., compatibility with current system & computer capabilities; consult with users to identify current operating procedures & clarify program objectives; formulate plan outlining steps req'd. to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer; apply knowledge of computer programming techniques & computer language; analyze, design, develop & implement changes & enhancements; perform data analysis & modeling, unit testing, system & regression testing, trouble shooting & gather info. & advise users of any ramifications by changes or problems in the system including production problem analysis; and using IBM 3090, IBM 9021, IBM PC's, UNISYS Mainframe, MVS/ESA, TELQN, IMS DB/DC, COBQL II, JCL, REXX, CA-7, PANAPT, EASYTRIEVE, Micro Focus COBQL, Micro Focus Revolve, BTS, JCL, NDM (IBM/UNISYS) & MS DQS. Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed. & exp.; 2 yrs. exp. in the job offered or 2 yrs. in a related occup. such as Programmer, Programmer Analyst, Analyst Programmer, Senior Programmer Analyst, Systems Analyst, Senior Analyst, Software Engineer, Senior Support Coordinator or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd. ed. & exp. Must have some related exp. including system enhancements & production problem analysis & using each of the following: MVS/ESA, TELQN, IMS DB/DC, COBOL II & JCL. $60,000/yr, 40 hrs/wk, 8a-5p. Send resumes to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202 & include Ref. #114796. Employer Paid Ad.

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Programmer/Analyst needed for computer consulting firm located in Duluth, Georgia. Job duties include: Software consulting on various in-house projects and/or contract basis throughout the United States. Develop computer systems and applications and re-engineer software applications. Analysis, design, program development and testing. Use SYNQN/ 2e, RPG/400, CL/400, PDM, SEU, SDA, RLU, and DFU on AS/400 machine. Applicant must have a B.S. degree in Computer Technology or Computer Science. A foreign degree is acceptable if determined to be equivalent by a recognized authority. Applicant must also have 2 yrs. of exp. in the job duties described above or 2 yrs. exp. as a Programmer/Analyst. 2 yrs. exp. must include 2 yrs. with SYNON/2e, RPG/400, and CL/ 400 including programming utilities on IBM AS/400 machines. 40 hrs/wk, 8:00 am - 5:00 pm, Mon-Fri, $45,000/yr. Apply in person or send 2 resumes to: Georgia Department of Labor, Job Order # GA 6014757, 1535 Atkinson Road, Lawrence, GA 30243-5601 - or the nearest Department of Labor Field Service Office.

SOFTWARE ENGINEER: Develop C++ applications for next generation cost optimizer for internal use and for external sales. Analyze, design and develop client-server applications in visual C++ with GUI (including Microsoft Foundation Class Libraries). Design databases and develop applications to collect data and generate reports. Use Object Oriented methodologies in project design and development. Create and maintain relational databases in SYBASE. Use C++ programs and SQL scripts to access data. Develop programs on multiple platforms (UNIX, DOS, & MS-Windows) using cross-platform development tools. Use UNIX shell Scripts and commands. Master of Science degree required in Computer Science plus 1 year of experience in the job duties described above. Salary: $45,000/year for a 40 hour work week. Apply at the Texas Workforce Commission, Fort Worth, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, JO# TX7855847. Ad paid by an Equal Opportunity Employer.

Analyst/Programmers - plan, develop, test, document computer programs, applying knowledge of systems and software used for both Pcs and mainframes. Evaluate user requests to determine feasibility, cost & time required, compatibility with current systems, computer capabilities. Formulate plans outlining steps to develop programs, convert project specs into sequence of instructions and steps for coding into computer processable language. Analyze, review, alter programs to increase operating efficiency or to adapt to new requirements. Bachelor's in Computer Science or Elec. Eng. plus 2 yr. exp. in job offered or 2 yr. exp. as Systems Analyst or Software Eng. (with ability to perform main job duties) req. Salary: $818/wk. Job site: various unanticipated sites throughout the U.S. Employer location: Pittsburgh. Send resume to Job# 5007151, Greg Schwing, Office of Employment Security, 2100 Wharton St., Pittsburgh, PA 15203.

PROGRAMMER/ANALYST: (2 positions) 40 hrs/wk. 8 a.m. - 5 p.m., $35,350/yr. Carry out the program analysis, program design, coding and testing of software application systems on IBM PC utilizing ORACLE, C, BASIC and FORTRAN. Reqr. bachelor's degree in Computer Science or Electrical or Mechanical Engineering. Reqr. 1 yr. expr. in Job offered or 1 yr. expr. in Systems Analysis &/or Programming &/or Computer Consulting. Reqr. work expr. in dev. of s/w systems on IBM PC and with ORACLE, C, BASIC and FORTRAN. Employer is a s/w development/consulting firm. Relocation to client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202 Ref. No. 99396.

Software Engineer. Design & develop distributed software for telecommunications carriers to monitor broadband network performance using object-oriented & client-server technology. Database & GUI development. Tools: C++; Unified Booch OOA/D; LAN; UNIX; TCP/IP; Socket; SQL; Sybase; Motif; Xlib. M.S. in Computer Science as well as 6 mos. experience in job offered or as Research Assistant required. Previous experience must include: design of software for telecommunications; GUI development; UNIX; TCP/IP; Socket; C++; Motif/Xlib; SQL. 40 hrs/wk, 9am-5pm, $51,012/yr. Must have proof of legal authority to work permanently in the U.S. Send resume to: Dennis Baer, Clear Communications, 100 Tri-State International, Lincolnshire, IL 60069. (847) 317-2500.

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SOFTWARE ENGINEER. Research emerging medical imaging technologies & design & develop computer software in conjunction hardware development for medical applications. Analyze software Reqts incl. images from CT, MRI & other medical imaging equipment, incl. analyzing scanning medical images. Compile statistical analysis to predict & measure outcome & consequences of design. Develop diacom emulation; filter & perform stochastic screening; & develop & design implementation for a printer/network connection. Maintain existing Simple Network Management Protocols & Management Information Base implementation of current print systems. Req: M.S. degree in Comp. Sci. or Bioengineering & 3 years of exp. in same position or as a Comp. Progr. or a Medical Equip. Eng. Exp., which may have been obtained concurrently, must include the following: 3 yrs exp. in writing image processing tools for analyzing medical images; 3 yrs exp. in PACS & DICOM implementation incl. HIS & RIS; 3 yrs exp. in modalities & stochastic screening. & 3 yrs exp. in Microsoft Windows platform with Galaxy Tool prog., incl. C, C++ programming langs., Software for Power Electronics, Digital Signal Processing, Comp. Graphics & Digital Image Processing. EOE. 40 hr/wk; 8 a.m. to 5 p.m.; Salary 41,000/yr. Send resume (no calls) to: James Ward, QMS, Inc., One Magnum Pass, Mobile, AL 36618

Software Engineer with two years of experience as a software engineer or computer professional who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with two years of experience using ORACLE, UNIX, SQL*Forms, SQL*Reportwriter, C and Pro*C. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Master's degree in a computer science field. $55,000/yr. 40 hours/wk., 9.00 - 5:00. Send resumes, listing job order number 7014485, to Charlene Cogley, 2103 Ninth Ave., PO Box 1159, Beaver Falls, PA 15010.

Consultant, 40 hrs/wk, 9am - 5pm, $48,000/yr. Design, develop, implement & test software for management information systems. Graphical User Interface (GUI) development. Tools: C; C++; UNIX; Informix; SQL; X-Windows/Motif. M.S. in Computer Science or Electrical Engineering as well as 3 months in job offered or as Software Consultant required. Previous experience must include: C; C++; UNIX; SQL; GUI development with Motif. Must have proof of legal authority to work permanently in the U.S. Send resume to: Kristin Williams, Staffing Manager, Taylor Management Systems, Inc. 2800 River Rd, Ste 425, Des Plaines IL 60018. (847) 803-1500.

PROGRAMMER ANALYST: (2 positions) 40 hrs./wk., 8am-5pm, $45,900/yr. Prepare program specifications, develop programs, carry out unit & system testing & assist in implementation of s/w application systems on workstations utilizing UNIX, BTOS, ORACLE, C, C++ & COBOL. Reqr. Bachelor's degr. in Computer Science, Electrical or Mechanical Engrng or equivalent* & 1 yr. expr. in job offered or 1 yr. expr. in Systems Analysis &/or S/W Engineering &/or Programming &/or Computer Consulting. (*Will accept 4 yrs expr. in job offered or related occupation in lieu of Bachelor's degree & 1 yr. expr. in job offered or related occupation.) Reqr. experience in development of application systems on workstations and with UNIX, BTOS, ORACLE, C, C++ & COBOL. Employer is S/W development/consulting firm. Relocation to client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad". E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. #95496.

SOFTWARE/SYSTEMS ENGINEER required. Information systems design, development, implementation & maintenance on IBM MVS mainframes using IEF 5.x, command Level CICS, COBOL 370 & mainframe utilities JCL, TSO/ISPF, VSAM & REXX. Maintain & tune DB2 database using query languages OMF & SPUFI with Power Builder. Masters degree or its equivalent required in any Computer Related Curriculum such as Math, Computers, or Engineering plus 2 years experience in the job duties described above. Employer will accept a Bachelors Degree plus 5 years of software/systems development experience (2 in job offered) in lieu of formal Masters. Must have proof of legal authority to work in the U.S. Salary-$56,000/year for a 40 hour work week. M-F, 8:00 a.m.-5:00 p.m. Interested applicants send 2 copies of resume to Ms. Cathy S. Phillips, E&T Technical Services, SCESC-SC2000600, P.O. Box 1406, Columbia, SC 29202. Refer to Job Order #SC2000600. Ad paid by an Equal Opportunity Employer.

Software Engineer with one year of experience as a software engineer or computer professional who will develop software systems, applying computer science, engineering, and mathematical analysis, with one year of experience using Sybase, Oracle, ERwin/ERX, Windows, Novell Netware and PowerBuilder on PC 486 Workstations. Analyzes software requirements and performs testing and user training after development. Extensive travel and frequent relocation. Master's degree in a computer science field. $53,000/yr. 40 hours/wk., 9:00 - 5:00. Send resumes, listing job order number 7014488, to James McCoy, Manager, O.E.S., 6206 Broad Street, Pittsburgh, PA 15206

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Software Engineer: Design, develop Point-of-Sale software system, application for IBM 4680 including electronic payment and host communications systems. Provide technical services to IBM 4680 customers, designing, developing custom solutions for supermarket, GSA, Chain sales application users. Design, develop pinpad applications to interface IBM 4680 systems, develop portable object-oriented point of sale application to develop tools to migrate from IBM 4680 to OS/2 platforms. Will assist in design, development IBM 4680 Store Systems market: communications, Electronic Funds Transfer products, will provide marketing support. The Electronic Funds Transfer provides support for credit, debit (ATM), check authorization, electronic benefits (e.g. WIC, Foodstamps) in a Client-Server retail environment. Provides support for multiple authorization network message formats, off-line backup, recovery when network is not available, on-line settlement, reconciliation by card type. Communications protocols supports in the first release include asynchronous comms. and SNA LUO. Future releases will include TCP/IP, SNA, LU2, and X.25. Marketing support includes answering technical queries, documentation preparation serve as input to marketing materials, customer meetings participation, presentations. BS or BA degree in Mathematics, Computer Science or equivalent. 5 yrs. experience. 40hrs/wk; $55,368 yr. Resumes must include Social Security Number and Job Order Number NC7260933 and DOT code 030.062-010. Applicants should apply to the nearest Job Service office or to submit a resume to Job Service, 700 Wade Ave., PO Box 27227, Raleigh, NC 27611.

Programmer/Analyst to design, develop, implement and tune the physical and logical relational databases, GUI applications in distributed networking environment, Client/Server technology using MS-SOL server 4.2, Sybase 10.0, Visual C++, PowerBuilder 3.0 & 4.0, on Windows NT 3.2, UNIX operating systems; act as a performance analyst to analyze and improve the performance of the applications by tuning the database parameters, analyzing and designing the cache memory, database segment allocation for complete and optimal recovery; tune the SOL server options for optimum performance and design the read/write cache memory for the data to keep the expensive disk I/O to minimum keeping the RISC/CISC architecture into consideration; on-chip cache design and allocation of write buffer in write-through design to keep the Most Recently Used pages in the cache to keep the hit ratio high on a database read-write operations, analyze and design the cache write and flush strategies. Require Master in Comp. Sci. Require 6 mos. exp. as a Programmer/Analyst or Software Eng. which includes developing systems using PowerBuilder 3.0, Visual C++, MS-SOL, Server 4.2 and Windows NT. Graduate coursework must include Systems Analysis and Design, Computer Networks, C and UNIX, and Computer Systems Design. Will accept degree in Comp. Eng. or Elec. Eng. if coupled with the required coursework Master Thesis must include cache memory analysis/design. 40 hr wk. 9am-5pm. $58,000/yr. Send resume to 7310 Woodward, Rm 415, Detroit, MI 48202 - Ref. No. 115496. Employer Paid Ad.

Systems Analyst needed for computer consulting firm located in Duluth, Georgia. Job duties include: Software consulting on various in-house projects and contract basis throughout the United States. Design, develop, and implement application software. Re-engineering of software applications using state-of-the-art tools and techniques. Use SYNON/2e, RPG/400, CL/400, PDM, SEU, SDA, RLU, DFU and related tools and techniques on IBM AS/400 machine. Applicant must have a B.S. degree in Computer Science or Computer Engineering. A foreign degree is acceptable if determined to be equivalent by a recognized authority. Applicant must also have 2 yrs. of exp. in the job duties described above or 2 yrs. exp as a Systems Analyst, which includes 2 yrs. of design, development, and implementation of application software with SYNON/2e, AS/400, RPG/400, RLU, and SDA. 40 hrs/wk, 8:00 am - 5:00 pm, Mon - Fri, $45,000/yr. Apply in person or send 2 resumes to: Georgia Department of Labor, Job Order # GA 6014991, 1535 Atkinson Road, Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office.

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Senior Consultant. Design, develop, implement & support software for networking strategies in a multi-platform, multi-protocol environment. Network management. Unix internetworking. Lead project team. 20% travel to client sites. Tools: SNMP-based systems-HP Openview; NIS+; UNIX; TCP/IP; Network security-Firewall. M.S. in Computer Science or Electrical Engineering as well as 2 yrs experience in job offered or as Consultant or Network Engineer required. Previous experience must include: network design & management; SNMP-HP Openview; NIS+; TCP/IP; Unix internetworking; Network security-Firewall. Must be willing to travel to client sites. 40 hrs/wk, 9am-5pm, $75,000/yr. Must have proof of legal authority to work permanently in the U.S. Send resume to: Cathy Sutton, Human Resources, Whittman-Hart, Inc., 311 S. Wacker Drive, Ste. 3500, Chicago, IL 60606. (312) 913-9433.

Software Engineer with two years of experience as a software engineer or computer professional who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with one year of experience using Object Oriented Methodology, OLE using MS Windows, C++ and Visual C++. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Master's degree in a computer science field. $52,800/yr., 40 hours/wk., 9:00 - 5:00. Send resumes, listing job order number 9060637, to Greg Schwing, Manager, O.E.S., 2100 Wharton Street, Pittsburgh, PA 15203.

PROGRAMMER ANALYST [2 openings] (Ref#: 100796): Plan, develop, test & document computer programs, applying knowledge of programming techniques & computer systems; evaluate user requests for new or modified programs to determine feasibility, cost & time req'd., compatibility with current system & computer capabilities; consult with users to identify current operating procedures & clarify program objectives; formulate plan outlining steps req'd. to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer; apply knowledge of computer programming techniques & computer language; support & supplement design aspects & coordinate functioning of various sub-systems; document new or existing system upon enhancements; analysis, design & development of application software; ensure strict adherence to clients standards & project deadlines; & working on a variety of platforms including: IBM 3090, PC-AT/486, Novell Netware LAN, MVS/ESA, CICS, DB2, VS COBOL II, VSAM, CSP, JCL, ISPF, TSO & MS ACCESS. Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed. & exp.; 2 yrs. exp. in job offered or 2 yrs. exp. in related occup. such as Programmer, Programmer Analyst, Systems Analyst, Software Engineer, Assistant Engineer - Computer Applications or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd. ed. & exp. Must have some related exp. including designing & using each of the following: MVS/ESA, CICS, DB2, VS COBOL II & VSAM. $45,000/yr, 40 hrs/wk, 8a-5p. Send resumes to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202 & include Ref.#100796. Employer Paid Ad.

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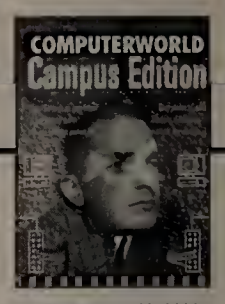

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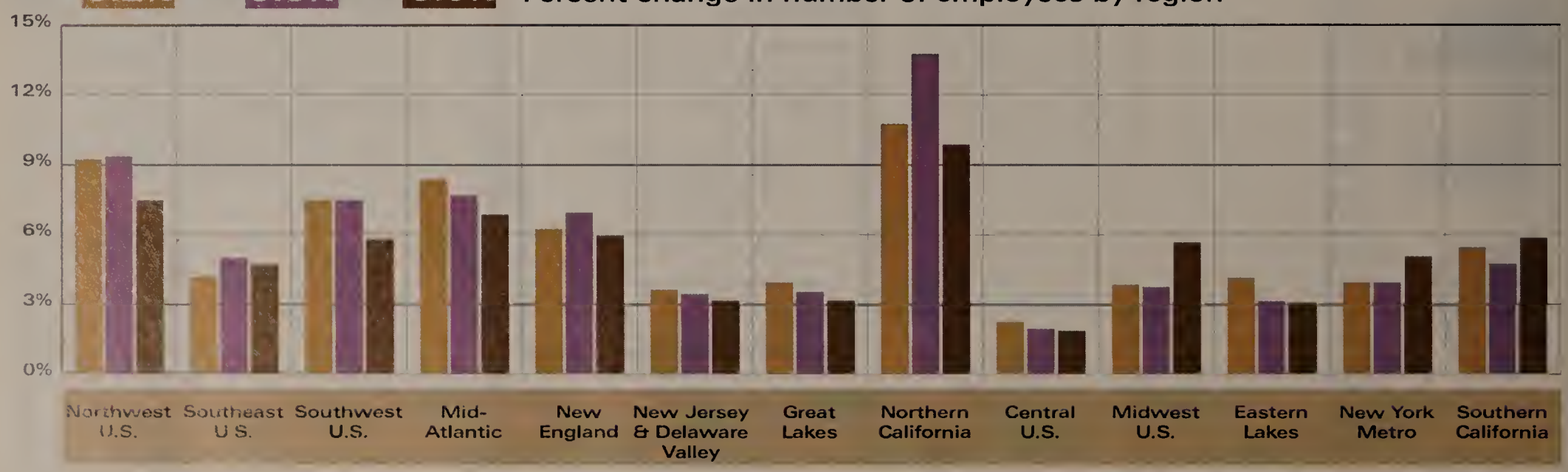

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Vacancy UAC.774

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There are three academic divisions at Tamaki: Arts, Commerce and Science and Technology. The Division of Science and Technology offers courses in biological sciences, chemistry, computer science, environmental management, environmental science, geography, geology, mathematics, marine science, physics, sports science and statistics. The Division also offers special BSc programmes in Environmental Management Science, Electronics and Computing and Sports Science and BTech degrees in Information Technology and Industrial Mathematics. The Information Technology group (IT group) comprising computer science staff is focusing on applied and theoretical topics in information technology (data compression, computer vision, image data communication, digital video, parallel and distributed computing, object-oriented systems).

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Further information about this position may be obtained from the Chair in Information Technology, Professor Reinhard Klette, phone 64-9-373 7999 ext 6625, fax 64-9-373 7001, email: rklette@cs.auckland.ac.nz.

Further information, Conditions of Appointment and Method of Application should be obtained from the Academic Appointments Office, The University of Auckland, Private Bag 92019, Auckland, New Zealand, phone 64-9-373 7999 ext 5790, 5097 or 5789, fax 64-9-373 7023. **Three copies** of applications should be forwarded to reach the Registrar by **21 October 1996.**

Please quote Vacancy Number UAC.774 in all correspondence.

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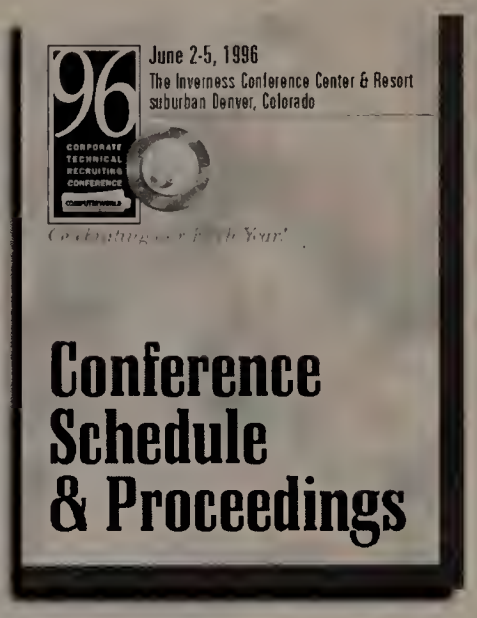

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Web pressures prompt outsourcing

By Alan R. Earls

While the Internet has excited end users, it has brought complexity to information systems. As a result, many organizations are deciding to outsource World Wide Web implementation from the get-go. Others make the decision when it becomes clear that the Web is the straw that may break the IS camel's back in terms of time and expense.

"Cutting cost is the driver more than anything else. It is hard for companies with limited resources — especially the smaller ones — to keep up with the demands of managing a network while the technology is changing almost daily," says Tom Jenkins, a broadband consultant at TeleChoice, Inc. in Verona, N.J.

Tough decisions

Jenkins says most companies don't just decide to outsource "out of the blue." It's a complex decision, increasingly influenced by the growing number and increased sophistication of Internet service providers and Web specialists. Sometimes the longer-term prospect of paying staff members high salaries to stay on top of technical advances spooks management.

"Unless you are a Fortune 1,000 company, it doesn't make sense to do it in-house — unless you have only the most basic Internet presence," Jenkins says. He recommends looking at solutions that integrate all communications issues. "Many companies want one-stop-shopping for network maintenance, access and a Web presence, and more and more of the local and long-distance carriers are offering those services," he says.

Outsourcers should be considered for more than just the Internet, says Traci Bair, network analyst at International Data Corp. in Framingham, Mass. But she offers two caveats. First, hiring an outsider doesn't mean you can divorce yourself from the process: You must still be ready to provide active oversight, she says. Second, it may be a mistake to reserve outsourcing only for midsize and smaller companies, she says. The decision of whether or not to outsource should be based on a complete look at whether the capability is crucial to keep or simply a source of headaches.

Bair advises "picking a peer-size provider" so that your needs match its capabilities and you "don't fall through the cracks."

"Break the decision down even further," suggests Daniel Dern, an Internet consultant and head of Dern Associates in Newton, Mass. For companies with good IS capabilities, it might make sense to hire out only part of the problem, such as mailing-list administration or server configuration.

Tim Sloane, director of messaging at Aberdeen Group, Inc. in Boston, says it all boils down to the same rules of thumb you would apply for any other IS outsourcing decision: Establish where your expertise is and what is mission-critical.

Using that formula, most firms will achieve happiness just by concentrating on Web content and passing implementation and upkeep concerns to others, he says.

The next level of choice involves geography. Despite the Internet's capability for making location a nonissue, Sloane advises firms to choose nearby Internet service providers and outsourcers so the subtle issues of control can be handled effectively.

Adequate oversight is also related to security, a perceived stumbling block to outsourcing that Sloane feels can be addressed easily. "The most critical issue for companies is still physical security [of facilities], followed by ensuring that employees conform to security procedures," Sloane says. Too many companies worry about the Internet but haven't taken care of those other, more basic issues, he says. Outsourcers can be just as secure as employees, he says, if normal business safeguards are in place — usually through contractual language.

Still, Dern likens putting a company on the Web to "knocking a 16-foot hole in the side of your building."

"You need to have a way to keep the bums out," he says. "Even with a good outsourcer, you have to make sure that if someone breaks in to the Web server, they can't also get into your main system."■

Earls is a freelance writer in Franklin, Mass.

Get Web feet without getting soaked

Some analyst suggestions for weighing Internet outsourcing options and making the most of Web resources:

1. **Determine whether the Internet is a mission-critical activity for your company. Many firms will find outsourcing makes sense.**
2. **Look for firms that can make you a priority. If you are a big company, select a bigger provider.**
3. **Get recommendations and references.**
4. **Make sure someone in your organization is enough of an expert to make informed decisions about Internet issues.**
5. **Make sure any outsourcing arrangement includes a mechanism that would send user problem reports to you so you don't risk customer goodwill.**

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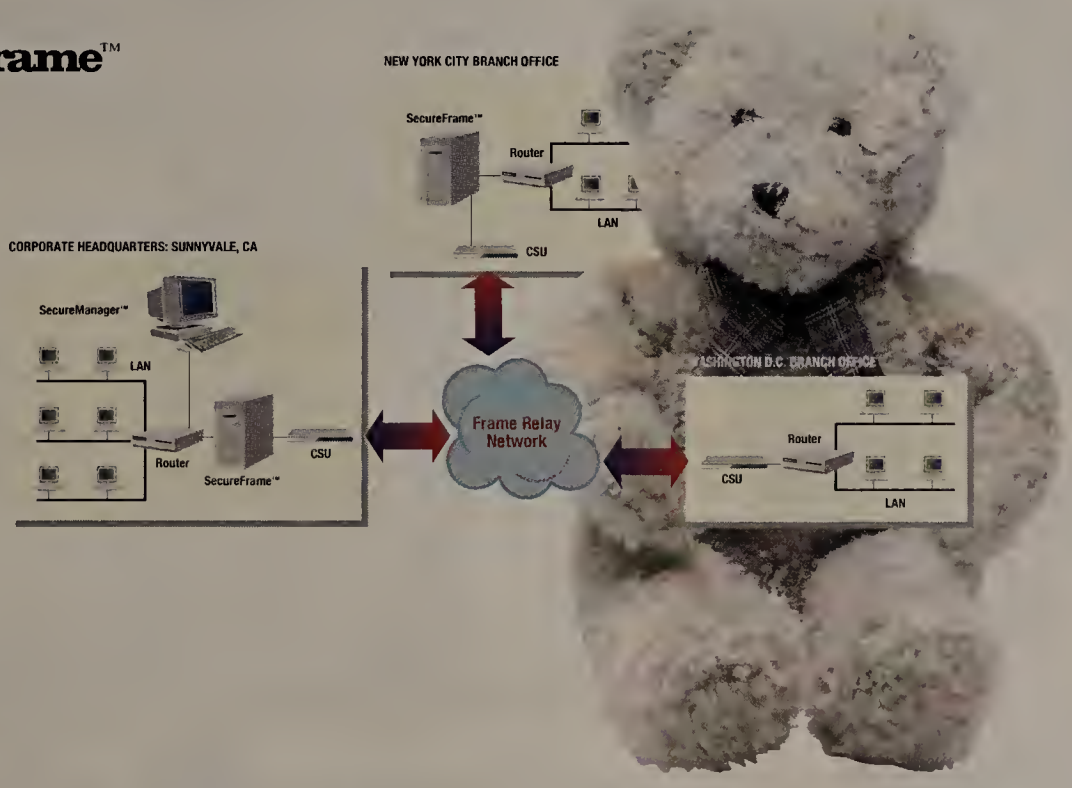

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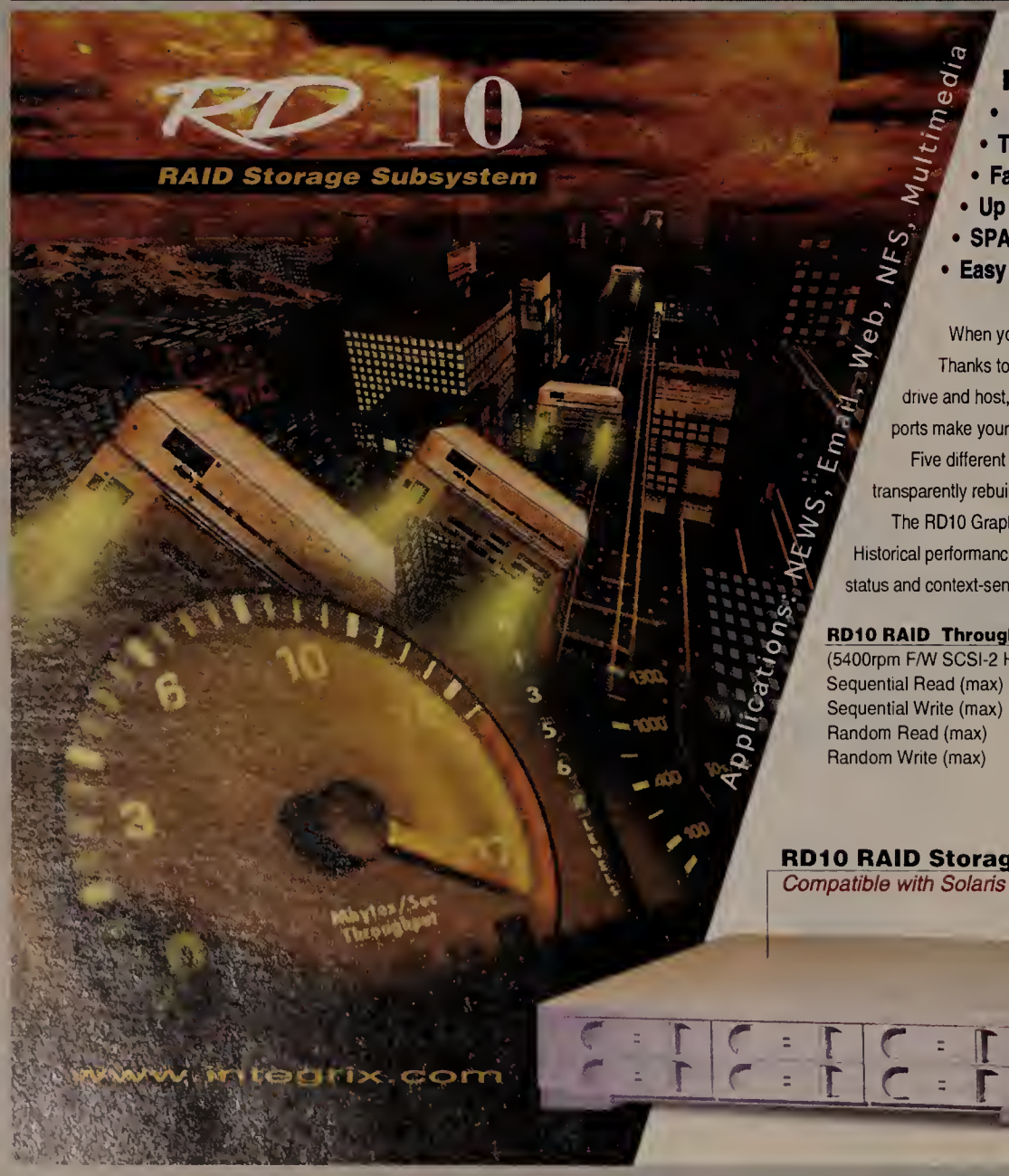

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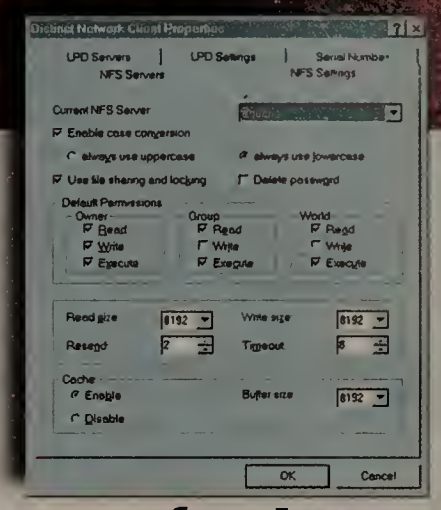

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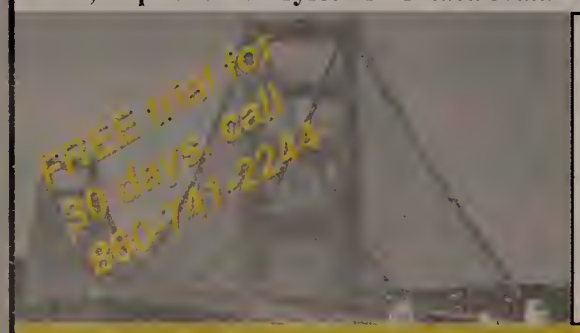

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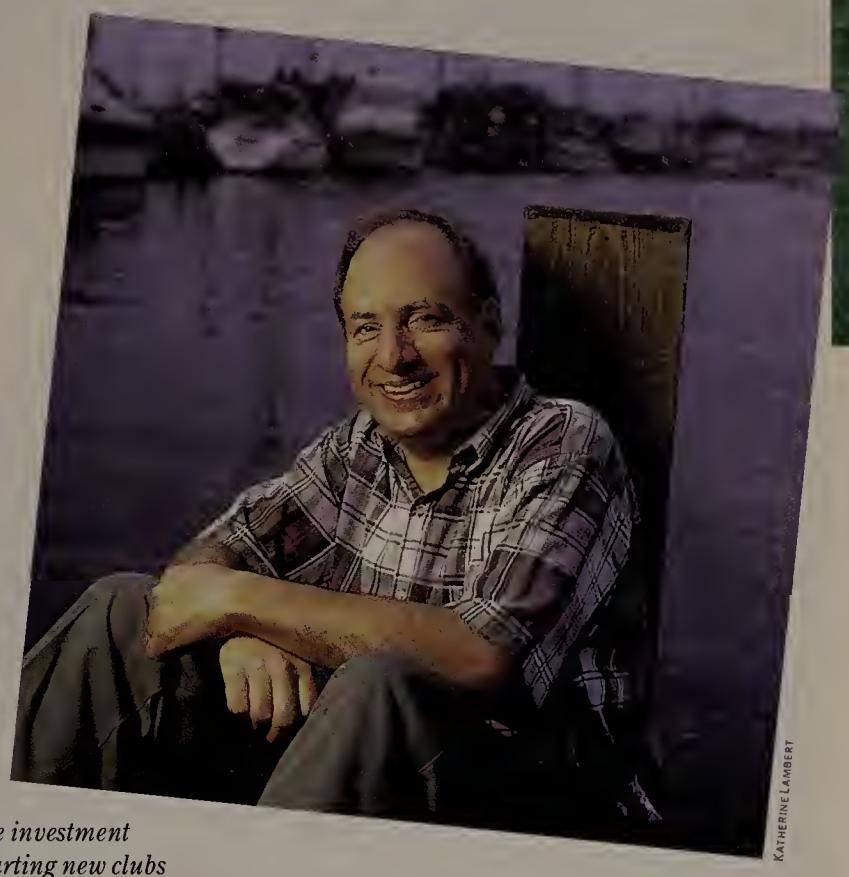
Manugistics takes flight with supply chain management software, **131**

Finance & Investing

Next week: Are cable modems the next Internet breakthrough?

Join the club

LILY DONG



KATHERINE LAMBERT

Doug Gerlach (left) and Joe Craig (right), *both online investment club veterans, help run Web sites that provide tips on starting new clubs*

By Rosemary Cafasso

For investors who want to hang out online but find big forums a little overwhelming, there's a more low-key alternative that's gaining momentum: online investment clubs.

An online investment club is essentially an electronic version of the old investment clubs to which your parents may have belonged. The idea is to bring together a small group of investors — typically fewer than 20 — who meet regularly to discuss the stock market and make group investments.

Frequently, these clubs manage stock portfolios well below $100,000, with individuals kicking in as little as $20 per month. Online clubs operate on the same basic premise, but they do business electronically.

Some groups, such as the Pioneer Online Investment Club (POLIC), which has a forum on CompuServe, conduct all business online — including meetings and stock votes. Other clubs continue to meet in person but now use World Wide Web sites to post club information and provide links to educational resources.

"The real advantage is we've got people all over the world with extremely different points of views and perspectives on investing," says Joe Craig, a founding member of POLIC and director of the computer group at the National Association of Investors Corp. (NAIC). "You wouldn't get that if you started a club with people from church or work."

Because many of these organizations are private, they are difficult to track. But industry observers say the number of clubs is growing rapidly and there are likely hundreds of clubs using the Internet today.

"In the last year, there's been at least a couple dozen new ones," says Doug Gerlach, editor of the NAIC's Web site (www.better-investing.org). Gerlach also maintains his own Web site on investing (www.investorama.com), which was set up in part to help investors establish their own online clubs. His site includes links to more than a dozen clubs.

Online bonding

The benefit of the online club approach is that it offers investors an opportunity to learn about the stock market and make money with a group of peers. Also, it can be less intimidating than dealing with a professional broker and can offer camaraderie and friendship, which investors may have trouble finding on the big forums.

As an example, the Manifest Investors started out as a Chicago-based club whose members met in person on a monthly basis. It continues those meetings but now relies heavily on the Internet to post club information, including the nomination of investments.

A key reason for the shift was to hang on to members who were relocating out of the Chicago area, says Mark Robertson, the club's president. The group now includes six remote members.

Of course, a possible downside to online clubs is the potential for fraud. Unless investors check out a club and new members carefully, they could wind up with a bad deal on their hands. Industry observers say they have not yet heard of a fraudulent online club. Yet the NAIC and other industry experts warn investors to be careful.

"The Internet enables dishonest people to take your money much more rapidly than before," says Barry Murphy, an NAIC spokesman. "So our position is to make sure you know who you are dealing with."

Be prudent

Club veterans say investors should simply use common sense when evaluating clubs or new members. The NAIC is prohibited from recommending specific clubs, but it does provide guidelines on launching a club, including how to officially install officers, incorporate and handle financial reporting for tax purposes.

Industry observers say investors should seek out groups that put up a few hurdles for new members. That shows the club is careful about screening applicants. POLIC, for example, requires that people serve an apprenticeship of several months before being voted into the club. During that time, the apprentice must help analyze a company for investment potential.

Another option to consider is getting some protection for the club. As an NAIC member, a club can apply for a bond that would protect the first $50,000 of a portfolio should an unscrupulous member steal funds.

And for long-term success, club veterans say to make sure the club's investment philosophy is similar to your own. Some clubs are made up of active traders, while others are far more conservative and hold stocks for long periods.

"You will be pooling money together," says John Sarnese, a member of The Mint Collectors, an online club with roots in the Philadelphia area. "You don't want a mix of people with long- and short-term goals."

If you are looking to start a new online investment club or join an existing group, here are a few starting points:

- From America Online, select Keyword and type "Invest" to reach the Investor's Network. Click on the "Help for Beginners" bulletin board, which is loaded with messages on starting and finding clubs.
- From CompuServe, select Go and type "NAIC," which will take you to the NAIC forum. Also, check out the NAIC's Web site, **www.better-investing.org**. It includes an Investment Club Support section with information on finding or starting a club.
- Try the Web site **www.investorama.com**, which is run by Doug Gerlach, who edits the NAIC Web page. It's a thorough guide on clubs.

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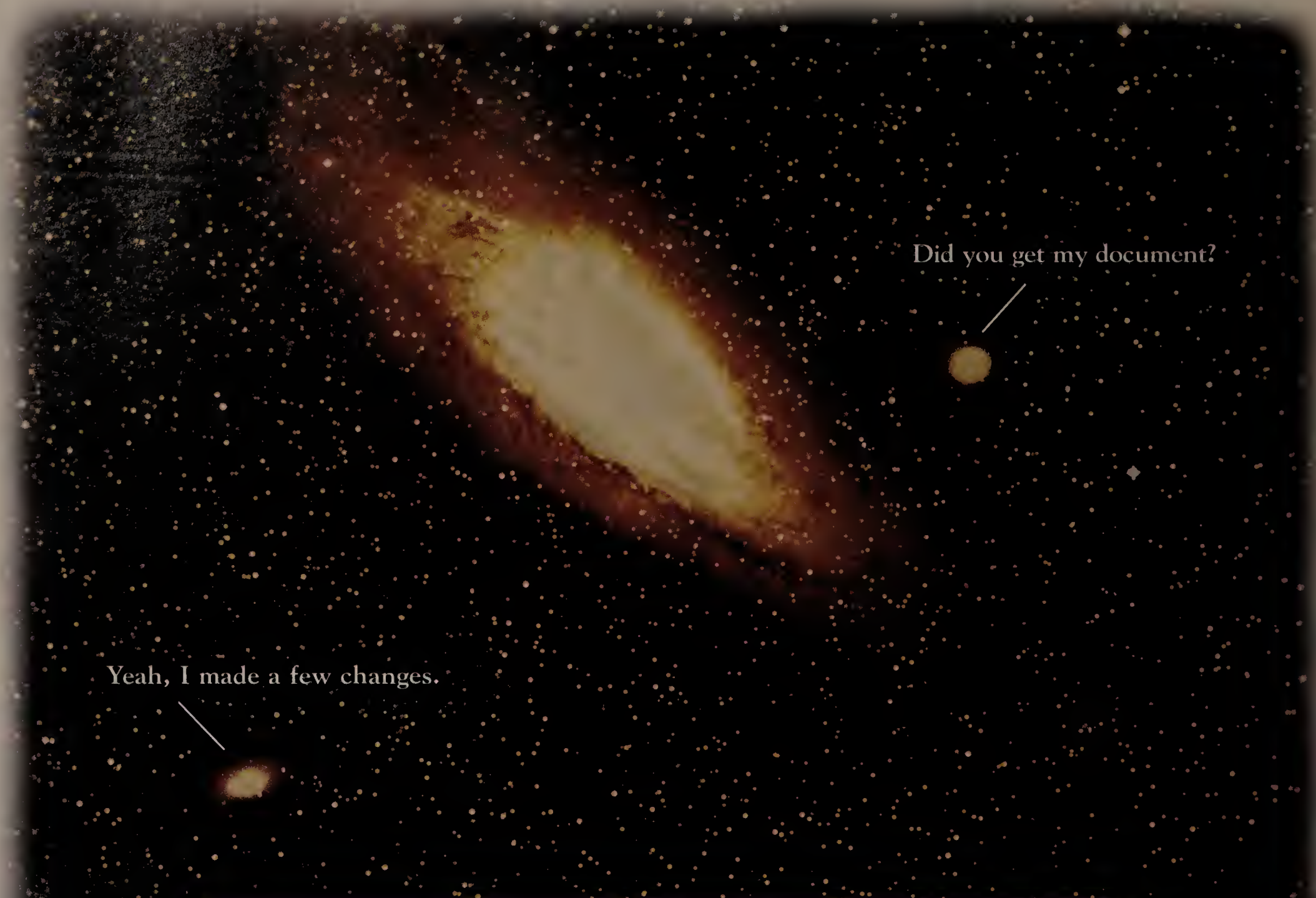

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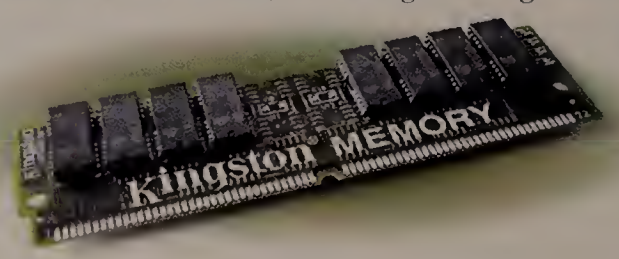

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The Week in Stocks

Gainers

PERCENT

US Robotics	35.7
Network General	31.6
Brooktrout Technology	30.8
Applix Inc.	30.6
SynOpsys	25.5
Comshare Inc.	23.3
Cambex Corp.	22.2
Arbor Software	22.1

DOLLAR

US Robotics	17.25
SynOpsys	9.63
Brooktrout Technology	8.00
Cascade Communications	7.75
Arbor Software	7.75
Shiva Corp.	7.38
Microsoft Corp.	7.31
Dell Computer Corp.(H)	7.25

Losers

PERCENT

Pinnacle Micro Inc.	-22.6
CrossComm	-21.1
Egghead Discount Software	-20.2
Meridian Data Inc.	-17.4
Business Objects(L)	-15.7
Gupta(L)	-14.7
ParcPlace Systems Inc.	-13.2
America On-Line	-12.6

DOLLAR

Xerox Corp.(H)	-4.38
America On-Line	-3.63
Motorola Inc.	-3.63
Business Objects(L)	-2.63
Apple Computer Inc.	-2.25
Adobe Systems Inc.	-2.25
Intuit Inc.(L)	-2.25
Filenet Corp.	-2.13

Industry Almanac

Manugistics turnaround

Manugistics Group, Inc. (Nasdaq:MANU) was the investment world's ugly duckling a year ago. Wall Street showed little interest in the supply-chain management software developer. Recently, though, Manugistics has been transformed.

Supply-chain management software lets companies plan production and distribution of products based on analysis forecasts. It combines data from each level of the supply chain and lets managers drill in to each aspect to optimize returns.

Analysts say Manugistics had a hole in its product line, which it plugged in May by buying Avyx, Inc. and its production management software. Competitors were taking advantage of the gap in Manugistics' product line to siphon off customers.

"Investors have finally started to rediscover Manugistics," says Jim Duggan, an analyst at First Albany Corp. in Stamford, Conn.

Duggan says now that Manugistics has plugged its product hole, it "has put together several good quarters in a very good market sector." That's because manufacturers are starting to understand that although the software can cost between $300,000 and $1 million, it pays for itself almost immediately, he says. Recent partnerships with Oracle Corp. and SAP AG have also helped boost Manugistics' image and stock price.

The recent run-up in Manugistics' stock price was also a result of PeopleSoft, Inc.'s acquisition of Manugistics competitor Red Pepper Software Co. Wall Street speculated on whether more acquisitions might take place in the sector, Duggan says, but none did.

— Stewart Deck

Takeoff

Manugistics' stock price has risen following strong sales and Wall Street acquisition speculation

Exch	52-Week Range			Sept 13 2 p.m.	Wk Net Change	Wk Pct Change
Communications and Network Services						**UP 6.12%**
COMS	53.63	33.50	3COM Corp.	51.63	4.00	8.4
AIT	66.88	49.63	AMERITECH Corp.	53.13	2.63	5.2
T	68.88	49.25	AT & T	55.38	2.75	5.2
ASND	71.25	16.50	Ascend Communications	56.94	3.19	5.9
BNYN	13.63	5.13	Banyan Systems Inc.	5.88	0.13	2.2
BAY	50.00	20.25	Bay Networks Inc.	26.38	-0.13	-0.5
BEL	80.38	43.50	Bell Atlantic Corp.	59.25	3.63	6.5
BLS	45.88	34.63	Bellsouth Corp.	38.63	2.50	6.9
BRKT	34.00	6.88	Brooktrout Technology	34.00	8.00	30.8
CS	87.75	53.00	Cabletron Systems	63.00	5.50	9.6
CSCC	76.38	14.00	Cascade Communications	76.38	7.75	11.3
CGRM	25.13	12.25	Centigram Communications	15.88	-0.25	-1.6
CSCO	59.38	30.50	Cisco Systems Inc.	57.88	3.88	7.2
CLIX	9.25	4.50	Compression Labs Inc.	7.00	0.63	9.8
CMNT	10.50	4.00	Computer Network Tech.	5.75	0.25	4.5
XCOM	14.50	7.50	CrossComm	7.50	-2.00	-21.1
DIGI	64.00	21.88	DSC Communications	27.50	-1.31	-4.6
FORE	44.75	15.38	FORE Systems Inc.	37.25	4.88	15.1
GDC	21.88	9.13	General Datacomm Inds.	11.88	0.88	8.0
GSX	42.00	28.00	General Signal Networks	41.63	0.50	1.2
GTE	49.25	36.63	GTE Corp.	39.88	1.50	3.9
LU	40.00	29.75	Lucent Tech. (H)	39.38	2.25	6.1
MCIC	31.13	22.38	MCI Commmunications Corp.	27.38	1.63	6.3
MNPI	34.50	5.50	Microcom Inc.	8.44	-0.81	-8.8
NETM	34.00	7.63	NetManage Inc.	8.38	0.31	3.9
NTRX	10.88	3.63	Netrix Corp.	7.88	0.00	0.0
NCDI	10.25	2.88	Network Computing Devices	5.31	-0.44	-7.6
NWK	42.00	11.13	Network Equipment Tech. (L)	12.25	0.25	2.1
NETG	27.63	15.00	Network General	21.88	5.25	31.6
NN	74.25	25.00	Newbridge Networks Corp.	68.00	4.00	6.3
NT	55.88	31.50	Northern Telecom Ltd.	52.13	2.00	4.0
NOVL	20.63	10.13	Novell Inc.	10.38	-0.38	-3.5
NYN	59.25	42.00	Nynex Corp. (L)	44.63	2.00	4.7
OCTL	30.50	12.63	Octel Communications Corp.	29.25	0.38	1.3
ODSI	43.25	16.50	Optical Data Systems Inc.	18.50	-1.50	-7.5
PAC	35.25	25.88	Pacific Telesis	33.63	1.25	3.9
PCTL	44.72	20.75	Picturetel Corp.	33.50	1.50	4.7
PTON	10.75	2.38	Proteon Inc.	3.50	0.63	21.7
RACO	7.13	3.50	Racotek Inc.	4.13	0.13	3.1
RETX	10.88	1.81	Retix	7.31	0.94	14.7
SBC	60.25	46.00	SBC Communications	48.50	2.00	4.3
SFA	20.63	11.38	Scientific Atlanta Inc.	14.38	1.88	15.0
SHVA	87.25	21.13	Shiva Corp.	58.13	7.38	14.5
FON	45.50	29.25	Sprint Corp.	39.88	1.00	2.6
SMSC	23.50	10.25	Standard Microsystems Corp.	13.44	0.00	0.0
TBIT	13.88	2.38	Telebit Corp.	13.13	0.00	0.0
USRX	105.50	32.75	US Robotics	65.63	17.25	35.7
USW	48.38	27.25	US West Inc. (L)	29.75	1.88	6.7
XIRC	17.50	8.88	Xircom	15.00	2.38	18.8
XYLN	76.00	34.00	Xylan Corp.	45.38	3.13	7.4
PCs and Workstations						**UP 4.12%**
AALR	10.38	5.88	Advanced Logic Research	8.13	0.25	3.2
AAPL	45.50	16.00	Apple Computer Inc.	20.69	-2.25	-9.8
ASTA	13.00	4.00	AST Research Inc. (L)	4.75	-0.25	-5.0
CPQ	60.13	35.88	Compaq Computer Corp.	60.13	2.75	4.8
DELL	76.13	23.00	Dell Computer Corp. (H)	76.13	7.25	10.5
GATE	46.63	18.00	Gateway 2000 Inc.	46.63	4.50	10.7
HWP	57.75	36.88	Hewlett Packard Co.	46.50	2.88	6.6
MUEI	29.88	8.75	Micron International Inc.	18.38	3.06	20.0
NIPNY	75.13	49.88	NEC America	53.38	0.13	0.2
SGI	41.88	20.00	Silicon Graphics	23.13	-0.25	-1.1
SUNW	67.13	26.38	Sun Microsystems Inc.	56.88	2.81	5.2
Large Systems						**UP 2.18%**
AMH	13.50	6.75	Amdahl Corp.	9.50	0.13	1.3
DGN	19.13	8.88	Data General Corp.	12.38	1.75	16.5
DEC	76.50	30.50	Digital Equipment Corp.	41.75	3.38	8.8
IBM	128.88	83.13	IBM	122.25	6.75	5.8
MDCD	20.25	7.13	Meridian Data Inc.	7.13	-1.50	-17.4
NETF	7.25	2.63	NetFrame (L)	2.63	-0.19	-6.7
SQNT	24.63	10.13	Sequent Computer Sys.	12.25	0.88	7.7
SEQS	8.50	1.88	Sequoia Systems Inc.	2.25	0.19	9.1
SRA	36.13	16.63	Stratus Computer Inc.	18.38	-0.50	-2.6
TDM	15.25	8.38	Tandem Computers Inc.	11.00	0.38	3.5
UIS	9.13	5.38	Unisys Corp.	6.00	-0.13	-2.0
Software						**UP 2.49%**
ADBE	74.25	28.50	Adobe Systems Inc.	31.63	-2.25	-6.6
AMSWA	8.75	3.63	American Software Inc.	5.38	0.38	7.5
APLX	42.50	8.25	Applix Inc.	29.38	6.88	30.6
ARSW	82.75	28.75	Arbor Software	42.75	7.75	22.1
ADSK	50.00	18.50	Autodesk Inc.	26.13	3.88	17.4
BGSS	50.00	29.75	BGS Systems Inc.	45.25	0.63	1.4
BMCS	83.38	32.50	BMC Software Inc. (H)	83.38	5.88	7.6
BOOL	26.75	19.38	Boole and Babbage	25.13	1.13	4.7
BORL	21.25	6.06	Borland Int'l Inc.	7.25	-0.13	-1.7
BOBJY	55.50	11.75	Business Objects (L)	14.13	-2.63	-15.7
CAYN	11.88	4.00	Cayenne Software Inc.	4.63	0.13	2.8
CYE	27.88	14.13	Cheyenne Software Inc.	19.38	0.63	3.3
COGNF	27.38	9.75	Cognos Inc.	24.75	0.75	3.1
CA	59.63	24.88	Computer Associates	59.63	6.38	12.0
CVN	15.50	5.75	Computervision Corp.	7.75	-0.75	-8.8
CPWR	46.00	15.50	Compuware Corp.	44.00	2.63	6.3
CSRE	32.00	10.75	Comshare Inc.	18.50	3.50	23.3
COSFF	19.13	8.25	Corel Corp.	10.25	-0.19	-1.8
DWTI	13.75	3.25	Dataware Technologies Inc.	3.75	0.00	0.0
FILE	67.00	20.00	Filenet Corp.	23.00	-2.13	-8.5
FRTE	81.75	24.75	Forte Software	30.75	3.75	13.9
DDDDF	8.00	3.56	4th Dimension	6.00	0.00	0.0
FTPS	40.63	5.88	FTP Software Inc.	7.13	-0.38	-5.0
GPTA	10.50	3.00	Gupta (L)	3.63	-0.63	-14.7
HUM	28.88	15.00	Hummingbird Comm. Ltd.	20.75	0.88	4.4
HYSW	28.38	9.75	Hyperion Software Corp.	14.00	0.63	4.7
IRIC	16.25	10.00	Information Resources	13.13	0.38	2.9
IFMX	36.75	16.88	Informix Corp.	27.13	2.50	10.2
INGR	20.13	8.63	Intergraph Corp.	10.44	0.56	5.7
LEAF	12.63	2.63	Interleaf Inc. (L)	2.81	-0.06	-2.2
ISLI	23.13	7.50	Intersolv Inc.	8.25	0.19	2.3
INTU	89.25	27.25	Intuit Inc. (L)	30.25	-2.25	-6.9
LGWX	22.25	7.88	Logic Works (L)	9.06	-0.81	-8.2
MAPS	24.00	7.50	MapInfo Corp.	10.38	0.13	1.2
MATH	9.25	4.63	MathSoft	6.13	-0.63	-9.3
MCAF	67.00	17.63	McAfee Associates	67.00	4.50	7.2
MENT	22.88	10.88	Mentor Graphics	12.31	-0.94	-7.1
MIFGY	21.25	8.25	Micro Focus	11.00	0.00	0.0
MGXI	18.63	9.19	Micrografx Inc.	10.88	0.13	1.2
MSFT	129.69	79.88	Microsoft Corp.	129.69	7.31	6.0
ORCL	42.13	23.38	Oracle Corp.	41.25	3.81	10.2
PMTC	51.00	25.88	Parametric Technology (H)	51.00	3.88	8.2
PARQ	14.63	4.13	ParcPlace Systems Inc.	4.13	-0.63	-13.2
PSFT	79.75	34.25	Peoplesoft	71.25	0.13	0.2
PTEC	20.38	9.88	Phoenix Technologies	16.50	-0.13	-0.8
PSQL	14.13	3.13	Platinum Software	10.00	0.25	2.6
PLAT	25.75	9.25	Platinum Technology	11.25	0.38	3.4
PRGS	38.00	12.13	Progress Software Corp.	16.50	0.00	0.0
RNBO	25.50	14.63	Rainbow Technologies Inc.	18.75	1.00	5.6
REDB	61.00	18.25	Red Brick Systems Inc.	22.00	2.00	10.0
ROSS	8.13	2.19	Ross Systems	5.06	0.19	3.8
SAPE	58.25	29.25	Sapient Corp.	41.75	0.25	0.6
SCOC	12.13	5.50	SCO Inc.	7.00	0.00	0.0
SDTI	109.00	21.88	Security Dynamics Tech.	67.25	1.50	2.3
SKEY	51.75	13.38	Softkey International Inc.	16.88	-1.25	-6.9
SPCO	4.75	1.19	Software Publishing Corp.	1.63	0.13	8.3
SQAX	39.75	16.00	SQA Inc.	25.13	1.38	5.8
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SYMC	33.25	8.75	Symantec Corp.	9.88	0.75	8.2
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SSAX	30.63	8.25	System Software Assoc.	11.13	0.13	1.1
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TRUV	9.63	4.38	Truevision Corp.	4.88	0.00	0.0
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VMRK	19.00	5.75	VMark Software Inc.	7.38	-0.38	-4.8
WALK	12.75	6.25	Walker Interactive Systems	10.38	-0.75	-6.7
WALL	27.50	13.00	Wall Data Inc.	23.75	-0.88	-3.6
WANG	26.13	14.50	Wang Laboratories Inc.	17.88	0.38	2.1
Internet						**UP 0.21%**
AMER	71.00	24.50	America On-Line	25.25	-3.63	-12.6
BBN	48.75	15.63	BBN Corp.	17.88	0.13	0.7
CSRV	35.50	10.75	Compuserve Corp.	14.63	2.25	18.2
EDFY	55.75	16.25	Edify Corp.	25.19	0.94	3.9
LCOS	29.25	5.75	Lycos Inc.	9.00	1.25	16.1
NETC	91.50	16.00	Netcom On-Line	16.50	-1.38	-7.7
NSCP	87.00	24.50	Netscape Comm. Corp.	38.00	0.63	1.7
OMKT	42.25	13.25	Open Market Inc.	14.63	0.63	4.5
PSIX	29.00	6.75	PSINet	10.25	-0.38	-3.5
QDEK	39.50	5.63	Quarterdeck Corp.	6.88	-0.75	-9.8
RAPT	39.25	14.50	Raptor Systems (L)	14.88	-1.38	-8.5
SCUR	64.50	11.13	Secure Computing Corp. (L)	11.38	-0.63	-5.2
SPYG	61.00	12.00	Spyglass Inc.	16.75	-1.13	-6.3
YHOO	43.00	15.50	Yahoo! Inc.	20.50	2.13	11.6
Semiconductors						**UP 2.26%**
AMD	35.25	10.25	Advanced Micro Devices	13.00	0.75	6.1
ADI	30.13	17.00	Analog Devices Inc.	25.25	1.63	6.9
CHPS	15.88	7.88	Chips and Technologies	11.25	0.38	3.4
CRUS	61.13	12.63	Cirrus Logic	14.44	-0.56	-3.8
CY	24.63	9.13	Cypress Semiconductor Corp.	10.75	0.13	1.2
CYRX	46.00	11.50	Cyrix (L)	12.63	-0.50	-3.8
INTC	87.63	49.81	Intel Corp. (H)	87.63	5.81	7.1
LSI	62.50	17.00	LSI Logic Corp.	21.13	0.25	1.2
LSCC	42.50	19.75	Lattice Semiconductor	26.50	-0.63	-2.3
MCRL	31.50	12.00	Micrel Semiconductor Inc.	19.75	1.63	9.0
MU	94.75	16.63	Micron Technology	23.50	2.25	10.6
MOT	82.50	44.75	Motorola Inc.	48.63	-3.63	-6.9
NSM	33.38	13.00	National Semiconductor	17.75	0.00	0.0
TXN	83.75	40.50	Texas Instruments	47.63	2.75	6.1
VLSI	39.13	10.38	VLSI Technology	13.06	-0.06	-0.5
WDC	38.63	14.38	Western Digital Corp. (H)	38.63	4.63	13.6
XLNX	55.50	23.25	Xilinx	32.88	-0.13	-0.4
ZLG	47.50	14.88	Zilog Inc. (L)	15.38	-1.13	-6.8
Peripherals and Subsystems						**UP 3.12%**
APCC	16.75	7.88	American Power Conversion	13.13	0.13	1.0
ADPT	61.50	35.00	Adaptec Inc.	52.00	4.50	9.5
CBEX	12.88	3.00	Cambex Corp.	4.13	0.75	22.2
CGN	7.25	3.38	Cognitronics Corp.	4.75	0.69	16.9
CREAF	14.13	3.50	Creative Technology Ltd.	4.00	0.25	6.7
RACE	8.38	3.63	Data Race Inc.	7.50	0.63	9.1
DTM	9.38	4.13	Dataram Corp.	7.50	0.38	5.3
EMC	23.38	13.00	EMC Corp.	19.75	0.38	1.9
EMLX	21.38	6.38	Emulex Corp.	14.00	0.75	5.7
ESCC	29.00	16.50	Evans and Sutherland	21.13	-0.63	-2.9
EXBT	22.75	10.00	Exabyte	13.63	-0.13	-0.9
IISLF	4.13	1.50	Intelligent Infd. Systems	1.81	-0.06	-3.3
IOMG	55.13	2.75	Iomega Corp.	14.63	0.63	4.5
IPLS	8.25	1.88	IPL Systems Inc.	2.13	0.00	0.0
KMAG	37.50	17.63	Komag Inc.	22.50	3.00	15.4
MTSI	22.25	11.25	Micro Touch Systems Inc.	17.00	1.63	10.6
PEAK	34.75	17.25	Peak Technology Group	21.75	1.25	6.1
PNCL	19.75	4.88	Pinnacle Micro Inc.	6.00	-1.75	-22.6
AQM	6.75	3.25	QMS Inc.	5.25	0.13	2.4
QNTM	26.13	10.88	Quantum Corp.	16.25	0.75	4.8
RDUSC	8.75	0.94	Radius Inc.	1.50	-0.19	-11.1
SEG	67.75	36.13	Seagate Technology	50.50	3.50	7.4
STK	44.13	21.75	Storage Technology	34.75	-2.00	-5.4
STLC	8.75	1.25	Streamlogic Corp.	3.06	0.19	6.5
TEK	61.88	29.75	Tektronix Inc.	37.75	-0.38	-1.0
XRX	58.25	39.88	Xerox Corp. (H)	53.13	-4.38	-7.6
Services						**UP 3.52%**
AMSY	33.38	15.38	American Mgmt. Systems	27.38	0.38	1.4
ANLY	43.75	27.25	Analysts Int'l	43.00	1.50	3.6
AUD	43.38	33.25	Auto Data Processing	43.00	1.00	2.4
CATP	32.25	13.88	Cambridge Tech. Partners (H)	31.63	2.50	8.6
CEN	54.88	36.63	Ceridian Corp.	45.50	0.75	1.7
CDO	28.63	18.88	Comdisco Inc.	28.63	1.88	7.0
CHRZ	54.00	11.63	Computer Horizons	28.50	3.63	14.6
CSC	80.75	60.75	Computer Sciences	72.13	0.88	1.2
TSK	31.88	14.63	Computer Task Group	29.00	0.88	3.1
CPU	51.50	12.88	CompUSA Inc.	51.50	7.25	16.4
CDAT	27.50	10.13	Control Data Systems Inc.	22.38	2.25	11.2
EGGS	13.88	5.00	Egghead Discount Software	6.19	-1.56	-20.2
EDS	58.63	43.88	Electronic Data Systems Corp.	57.88	2.50	4.5
INAC	30.25	9.13	Inacom Corp. (H)	30.25	2.13	7.6
INEL	11.50	3.50	Intelligent Electronics	6.63	-0.50	-7.0
KEA	47.75	18.25	Keane Inc.	44.38	1.75	4.1
MSEL	7.38	1.88	Merisel (L)	2.25	0.00	0.0
MICA	16.25	7.25	Microage Inc.	15.13	0.00	0.0
PAYX	56.00	26.63	Paychex	53.25	0.75	1.4
PMS	55.50	35.13	Policy Management Sys.	39.63	2.88	7.8
REY	54.50	32.75	Reynolds and Reynolds	49.00	0.38	0.8
SCBI	30.50	14.44	SCB Computer Tech. Inc.	18.25	-0.50	-2.7
SEIC	26.38	17.75	SEI Corp.	23.25	2.13	10.1
SMED	72.13	37.38	Shared Medical Systems	55.25	1.13	2.1
SSPE	30.50	17.00	Software Spectrum Inc. (H)	30.00	-0.50	-1.6
VST	21.50	9.00	VanStar Corp.	20.88	2.38	12.8
SNDT	44.50	25.25	Sungard Data Systems	44.00	1.75	4.1

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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56K modems on tap for 1997

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usage charges.

Such modems could cut into the limited use of Integrated Services Digital Network (ISDN). Although ISDN lines offer 128K bit/sec. of bandwidth, the service isn't offered widely outside major metropolitan areas because it is difficult to order, provision and install.

But one user questioned whether regular analog lines can handle data at 56K bit/sec.

"We've done extensive testing of telephone line quality and found that once we go off campus, we can rarely push 28.8K bits of data over an analog line," said Bob Currier, director of network communications at Duke University in Durham, N.C. "The quality of the lines needed would be high."

Source: International Data Corp., Framingham, Mass.

Rockwell, in Newport Beach, Calif., wouldn't address that issue because it isn't shipping the product yet.

Users could use the 56K bit/sec. modems with higher-quality digital lines if problems arose with analog lines, though that would cost users more, Currier said.

"This [modem] technology sounds like it's got major potential and could prove to be tough competition for ISDN," said Maralyn Rosenblatt, vice president of client services at Countrywide Home Loans in Simi Valley, Calif. "I'm in the process of writing a telecommuting policy and seeing faster modems as an enabler for remote access. They'd also facilitate more efficient mobile computing."

Not a loner

Rockwell isn't alone in its development of faster modem technology.

"Today's 33.6 [K bit/sec.] certainly isn't the fastest speed for modems," said a spokeswoman for U.S. Robotics Corp. in Skokie, Ill. "We're looking at higher speeds, but we're not ready to announce anything yet."

A Rockwell spokeswoman wouldn't speculate about the price of 56K bit/sec. modems once they become available or whether existing modems could be upgraded to support the higher speed.

Pricing for 33.6K bit/sec. modems varies by model and features required. U.S. Robotics charges about $300 to $700 for the units; ISDN support costs an additional $100, according to the spokeswoman.

'net crunch

CONTINUED FROM PAGE 1

domly contacted last week reported escalating problems across the country, including lost connections, dead circuits, electronic-mail delivery failures and longer-than-usual waiting periods online.

Many people reporting problems were customers of service providers SprintLink, Netcom Online Communications Services, Inc. or PSInet, Inc. or smaller providers. Some of those interviewed pointed at router troubles within Sprint Corp.'s SprintLink network and traffic congestion at super hubs in northern Virginia and California. The Virginia hub, Metropolitan Area Exchange (MAE) Point East, is the merger point for 46 minor Internet service providers. That makes it the busiest public exchange on the Internet.

Jeffry Dwight, president of Greyware Automation Products, an Internet consultancy in Plano, Texas, said MAE East and MAE West in California have been down a couple of times in the past week. He described a scenario "where MAE East gets overloaded, things go down and things get routed through MAE West. [Then MAE West] goes down, and usually by that time MAE East is up again."

The nagging problem, analysts said, is that there is no way to pin down the exact source of this latest evidence of a slowdown, which is expected to worsen if the big carriers don't keep up with large-scale backbone upgrades. Upgrades are under way at MCI Communications Corp. and Sprint.

Also considered key to controlling traffic by some critics is setting stricter usage-based fees to restrict unlimited access enabled through flat monthly fees.

Sprint has had "isolated congestion problems" at network exchange points where access to trunks is shared with other providers, said Brad Hokamp, Sprint's director of data product management. Sprint is working with MCI, which shares many of its lines, to solve the problem.

Chris Walsh, director of engineering at UltraNet Communications, Inc., a Marlboro, Mass., Internet service provider that has 25,000 customers, said the company's Sprint circuit went down for 12 hours last week.

Causes of 'net traffic jam:

- Network Access Points are becoming more congested.
- Providers of the Internet Domain Naming System, a database with servers at each Internet service provider, are overwhelmed by new addresses.
- When one of the major network points goes down, there is a domino effect that ripples through the network.

Source: Nate Zelnick, Internet analyst, MecklerMedia, Westport, Conn.

"During the last couple of days, we've noticed serious problems that have caused us inconvenience," Walsh said. The company used another carrier's lines as a backup, though, he added.

Walsh speculated that thousands of students returning to school could be clogging the backbone. For example, UltraNet made a deal with Berklee College of Music in Boston, which will bring 3,000 more students on to the World Wide Web, Walsh said.

But several Internet watchers, including Garry Ray, an Internet analyst in North Conway, N.H., said the problem is much bigger than student traffic or an isolated router outage.

"This is far beyond a SprintLink problem," Ray said. Performance has turned "two to three times worse" throughout the country, he claimed.

Ray, who uses Net Express in Bethel, Maine, as a provider, said he has had a lot of E-mail bounce back to him, has had problems using Yahoo, Inc.'s search engine and keeps losing his connection. Using Traceroute, a tool that measures how long it takes to move a packet of data from a high-volume router, Ray reported problems with 20 major routers.

Jeff Pulver, an independent Internet analyst, also reported consistent problems with his connection, supplied by PSInet, and said they have escalated in the past several weeks.

Pulver, an Internet phone user, said the carriers need to re-examine how they route calls, which he believes causes many problems. Data sent five miles away from his Great Neck, N.Y., home, for instance, makes 14 hops as it travels through Washington, San Francisco, Washington again and New York before it returns to Long Island.

Nate Zelnick, an analyst at MecklerMedia in Westport, Conn., said that company experienced several major network connection outages recently that brought them "down for hours during a busy workday."

The cause? "We can't tell whether one department [launched] their Pointcast at once or somebody ran a backhoe over an MCI link," he said.

But Alan Taffel, vice president of sales and marketing at Internet service provider UUnet Technologies, Inc., said the firm hasn't noticed any problems of late.

"I always get my dander up a little bit whenever there are generalizations about the Internet," he said. "What's happening in one part of the Internet is not necessarily what's happening in other parts of the Internet."

Year 2000

CONTINUED FROM PAGE 1

information systems and business executives.

A recent survey of 161 organizations that are members of the Society for Information Management painted a depressing picture of how blind many business managers still are to the problem. IS managers reported that CEOs, internal auditors, boards of directors and corporate legal departments had the least awareness of the year 2000 issue.

IS "has not been doing its job and getting this information to the boardroom," said Peter DeJager, an independent consultant on year 2000 issues who is based in Toronto. That is a serious omission because directors "have the legal, and even the personal, responsibility to make sure the organization is protected from threats" such as the year 2000 bugs.

"Nobody's sponsoring it," said Jones, who chairs The Information Management Forum's working group on year 2000 issues. "The perception in business is ... there's no additional benefit to the corporation. It's just money down a hole." The rule change only "makes it a more onerous business proposition" for IS managers to sell, he said.

At issue is a July ruling by the Financial Accounting Standards Board (FASB), which sets the accounting practices that most major corporations use. The FASB ruled that companies can't amortize year 2000 work as a capital expense, which would allow them to spread the impact on profits over many years. Instead, companies will have to deduct those costs from their earnings in the quarter in which the work is done.

"This means a material hit on earnings, [and] that has all sorts of ripple effects," said Leland Freeman, director of Year 2000 Advisory Services at Management Support Technology Corp. in Framingham, Mass. "At what stage do you have to disclose this to your shareholders? Do the auditors have to get involved, asking questions about just how big your year 2000 problem is?"

The issues go beyond funding and accounting rules, according to Jeff Jinnett, an attorney at LeBoeuf, Lamb, Greene & MacRae, a law firm in New York. In a recent report, he warned that corporate directors could be liable to shareholder lawsuits if they failed to fix year 2000 problems or failed to disclose them properly.

IS managers "should be sending thousands of articles" about the year 2000 issue to their business managers if those managers are still balking at the price of year 2000 work, said William Born, a vice president at The Equitable Life Assurance Society in New York, which is well along on its year 2000 work.

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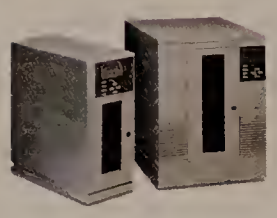

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David Coursey

Netscape: Put up or shut up

Silicon Valley has been rife with rumors that Netscape will buy Novell. I don't think it's going to happen. Netscape would be wacko to do such a deal. It's going to have to fight Microsoft on some other ground.

First, a confession: Two years ago I would have been in the cheering section for such a merger. I was a big proponent of Novell buying WordPerfect, and I even thought Novell should lift Borland from its morass.

But big mergers don't work these days, at least not very often. They certainly don't work when one of the partners is in deep trouble, as Novell is, and the other can hardly manage the amount of business it already has. It would be a dumb deal from a competitive viewpoint because it would be too easy to do the wrong thing with Netvell, Novscape or whatever they might call it.

Such a company would be tempted to throw itself into a frontal assault on Microsoft. Ray Noorda tried that at Novell once before, as did Jim Manzi at Lotus and Philippe Kahn at Borland.

Novell has done best at what Microsoft wasn't very good at doing. That used to be file management and printing, and it may be directory services in the future. Netscape may also find technologies or markets that Microsoft doesn't deal with to be very profitable. But Netscape can't survive without forcing Microsoft to do a few things its way.

A friend of mine has been involved in aikido, a martial art played with big sticks. The sticks are called bokken, and they are used only defensively. The goal, when someone brings down a 6-foot wooden sword on you, is to not be where the sword is. Novell has always done its best work not by competing with Microsoft but by innovating at the edges — doing the things Microsoft doesn't do well.

As for Netscape, it has to do some things better than Microsoft to create a market of its own. That's the hit-and-run strategy, in which Netscape confronts Microsoft where it must and then tries to whisk its customers off to safety — safety for Netscape, that is.

Then there's Netscape's parallel strategy, the one fought by lawyers. In a letter to the Justice Department last month, Netscape accused Microsoft of using muscle to get hardware OEMs to package Internet Explorer instead of Netscape's Navigator. The letter made headlines, but so far there's been little follow-up.

Why? Because Netscape is unlikely to get any real industry support in its media war with Microsoft. Consider: Netscape cited Hitachi as a company that had been muscled by Microsoft. Yet nobody at Hitachi seemed to know anything about Netscape's charges.

This means Netscape had better plan on going this one alone. It will be difficult, if not impossible, for Netscape to get anyone to join its anti-Microsoft chorus. Worse, customers don't really care what Microsoft does to the competition as long as it continues making software they want to buy.

So here's my advice: If Netscape wants to sue Microsoft, it should do so. Otherwise, shut up. Novell and Netscape should work together all they want. Even a debilitated Novell can be a powerful ally. But they shouldn't give any thought to a merger. Maybe they should consider it some day when they're both big and strong, but certainly not when the problems of one could be the death of the other.

Coursey is an industry analyst, consultant and editor in chief of "coursey.com," an online newsletter at www.coursey.com. His E-mail address is david@coursey.com.

Charles Babcock

Novell: Deal or get trumped

NetWare is in danger of being trumped by Windows NT. But John Young, Novell's new president, has one last card he can play before giving up the game to Microsoft — Novell Directory Services (NDS).

Without NDS, NetWare would soon be history, mute testimony to where Ray Noorda's "co-opetition" without competitiveness can lead you.

NDS gives Novell a lead over Microsoft in network design and administration. With NDS, a network administrator can establish as many workgroups as needed, assign fine grades of privileges and enforce uniform security policies. NDS allows centralized administration. It gives a central supervisor power over other administrators.

NT, on the other hand, is better suited for decentralized operations.

Under NDS, there's always a supervisor for the supervisors, and this leads to a clear chain of command and line of accountability. Under NT, it's possible for all network administrators to be equal, with all the attendant confusion.

If you want centralized management under NT, one of the few ways to get it is to organize the enterprise as one master domain, with all users logging in to one central server. But doing so defeats the purpose of having easy-to-maintain network segments. So NT remains a distributed — let's say fragmented — approach to the enterprise.

Under NDS, a general can give marching orders. Under NT, no captain can be sure what his fellow officers are doing at any time. Until NT gets a central directory late next year, Novell has a big advantage in the marketplace.

So, John Young, seize the day. Make it clear that Novell's commitment to TCP/IP is on a par with IPX, and trumpet NetWare's superior directory. There's no reason why Novell can't supply Windows NT with what it needs if you can make the port fast enough.

Once Novell does that, its directory begins to look like an industry standard and NetWare begins to look like a piece of the intranet. But hesitate on this road to the future, and the game is over.

* * *

Speaking of networking PCs, those who believe the network PC is dead on arrival should watch closely as Pinkerton Security Services upgrades its distributed systems.

The Encino, Calif., firm is testing a way to convert an NT server into a host for 15 low-cost desktops. The move, which harks back to dumb terminals attached to minicomputers, could save Pinkerton "several million dollars" in hardware and system maintenance costs, says Linda Bennett, IT director.

In fact, the arrangement mimics what Pinkerton already uses. It employs and schedules security guards in 180 offices worldwide using applications displayed on dumb terminals that are run by Motorola servers.

Pinkerton is testing Citrix Systems' WinFrame running on NT and displaying applications on windowing terminals, such as those available from Wyse Technologies, or diskless network computers about to emerge from IBM. Some 286 and 386 PCs that have been serving as doorstops at Pinkerton could even get hoisted back onto desktops as server-driven terminals.

Pinkerton is a case where few employees are knowledge workers who need a fully loaded PC. But others may find that a "smart" terminal attached to a server can handle many of their distributed, routine tasks as well.

Babcock is *Computerworld*'s technical editor. His Internet address is charles_babcock@cw.com.

Philips Semiconductors *in Sunnyvale, Calif., has unveiled a complex programmable logic device to boost speed and cut power consumption in notebook computers. The device uses so little energy, it can run on a 3-volt grapefruit battery.*

Vendor roulette

Having trouble writing that business plan, press release or home page? For inspiration, try popping this address in your Web browser: www.athenanow.com/cgi-bin/engine.cgi. The Web page generates a fictitious company profile assembled from random words and phrases. The profile includes the ever-present mission statement, products, executive biographies and vacuous quotes. Every time you reload the page, you get another randomly generated company profile. Here are some sample excerpts:

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Software 'tortured' during testing, PETS claims

Victims cooped up in tiny rooms

NEW YORK – People for Ethical Treatment of Software (PETS) announced today that more software companies have been added to the group's "watch list" of companies that regularly practice software testing.

"There is no need for software to be mistreated in this way so that companies like these can market new products," said Ken Grandola, a spokesman for PETS. "Alternative methods of testing these products are available."

According to PETS, these companies force software to undergo lengthy and arduous tests – often without rest – for hours or days at a time. Employees are assigned to "break" the software by any means necessary, and inside sources report that they often joke about "torturing" the software.

"It's no joke," Grandola said. "Innocent programs, from the day they are compiled, are cooped up in tiny rooms and 'crashed' for hours on end. They spend their whole lives on dirty, ill-maintained computers, and they are unceremoniously deleted when they're not needed anymore."

Grandola said the software is kept in unsanitary conditions and is infested with bugs.

"We know that alternatives to this horror exist," he said, citing industry giant Microsoft Corp. as a company that has become successful without resorting to software testing.

– Original author unknown. Contributed by Joe Warren, Burlingame, Calif.

Inside Lines

Banking dinosaurs bite back

When IBM and 15 banks launched the Integrion Financial Network last week, several bankers lashed out at Microsoft Chairman Bill Gates. In a speech he made a few years ago, Gates called bankers "dinosaurs." That remark still rankles the old guard. "If we are, in fact, 'dinosaurs,' then a new breed" of bankers are being created through Integrion, said Robert Gillespie, president and CEO of KeyCorp in Cleveland.

Did they come with Windows?

Speaking of Gates, the Microsoft honcho recently shot the best low net score at a charity golf event in Seattle. The tourney was sponsored by home products manufacturer Wayne-Dalton Corp. and Richard Karn, a.k.a. "Al" on the comedy TV show *Home Improvement*. Gates won Wayne-Dalton garage doors, which prompted Karn to quip, "He's got what, a 36-car garage?"

Lotus to get in on Net.Action

Sources say Lotus is ready to ship Net.Action, the first of its Internet applications. Net.Action, which is built on Lotus' Domino Web/Notes server, lets users quickly create Internet or intranet World Wide Web pages via Hypertext Markup Language templates. Net.Action also will ship as part of Notes 4.5 this year.

Jewish Day of Cyberatonement

One of the largest Jewish houses of worship in the world, the Reform congregation Temple Emanu-El in New York, will let Internet surfers access Rosh Hashana and Yom Kippur services via the synagogue's World Wide Web site (www.emanuelnyc.org). Yom Kippur services start at noon Sept. 23 and run for about 18 hours. The "netcast" is produced by WebSine, Inc. (www.websine.com), a New York firm that also produced Temple Emanu-El's Cyber-Seder during the spring holiday of Passover.

Apple takes Big Easy way out

Apple Computer is mining the bayous for new product names. The company has renamed its Meta Content Format (MCF) and Project X3-D browser plug-ins. Rather than choose monikers that play off the overused puns for Java and coffee, the Cupertino, Calif., computer maker has gone Cajun. Project X will be renamed HotSauce, and MCF will be called HotSauce MCF. Let's hope a slew of bad Cajun puns aren't on the way. Otherwise, the Paul Prudhomme plug-ins, the etouffee interface and the crawfish command bar can't be far behind.

AOL's Walsh melts ICE audience

America Online's Mark Walsh was a quip machine at the Internet Commerce Expo conference last week. He described Notes as being "like every button on your VCR: You know they do wonderful things, but you never use them." And he joked at AOL's expense, too: "We had a 19-hour outage a few weeks ago. Our 2400-baud customers thought it was normal response time."

Microsoft Corp. and Folio Corp. recently mailed out invitations to a press conference and included a fresh, new dollar bill in the envelope. Journalistic ethics would've required us to return the payola — and huffily, too. But, to our shame, we kept it — at least until the following weekend when we gave the dollar bill (OK, maybe it was a different dollar bill) to a cheroot-smoking panhandler in a wheelchair. No doubt the panhandler will go on to influence a corporation to spend millions on Microsoft and Folio products, thus proving the companies' marketing investment to be well-spent. If you have news for Computerworld, *send it to News editor Patricia Keefe at patricia_keefe@cw.com, or call her at (508) 820-8183. The good news is you don't have to give us a dollar. The bad news is we won't give you a dollar either.*

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